THE ELEMENTARY SCHOOL JOURNAL

Continuing "The Elementary School Teacher"

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Educational News and Editorial Comment

THE CHICAGO COMMISSION OF NINE

The report of the commission which nominated Mr. Chadsey to the Chicago Board of Education is a document of such significance in the history of school administration that it is worth reproducing in full. The Board of Education acted in accordance with the recommendations of the commission, electing Mr. Chadsey by a vote of 11 to 4 and fixing his salary by a vote of 11 to 3. Mr. Chadsey has entered on his duties.

To the President and Members Board of Education, Chicago:

GENTLEMEN: As members of the Commission appointed by your honorable body to recommend a Superintendent for the Public Schools of Chicago,

The *Elementary School Journal* is published monthly from September to June by the University of Chicago. It is edited and managed by the Department of Education as one of a series of educational publications. The series, including also *The School Review* and the *Supplementary Educational Monographs*, is under a joint editorial committee and covers the whole field of educational interests.

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we appreciate the importance of the task assigned to us. We have given to the work of investigation many hours of careful consideration. The position of Superintendent of our Public Schools is one of supreme importance. We realize that a man who can successfully fill the position must be one possessed of high professional qualifications and wide experience. He must have courage, honesty, and imagination, together with great ability as an organizer and an administrator.

Under the law passed by our Legislature about two years ago, upon the Superintendent devolves the task of organizing and administering a system of education of such magnitude and importance as to require the very best available man to be found in the country. Such a man we have sought.

In the conduct of the work we have held more than twenty-five meetings; nearly all of them have been attended by every member of the Commission. At these meetings we have listened to the recommendations presented by interested citizens and by official representatives of the various organizations with which our Public School teachers are connected. Thirty-five persons residing in Chicago, and six non-residents, have been before us. We have had conferences with Mr. Mortenson, the Acting Superintendent of our Public Schools, and his Assistant Superintendents and Supervisors.

We have secured and studied with profit the material collected during a similar canvass made by the Boards of Education of Buffalo and Cleveland.

We have had personal interviews with several of the men most highly recommended for the position, but in no instance has any person appeared before us as a candidate.

As no member of the Commission is a professional educator, we have sought the names of foremost educators of the country and obtained from them either by letter or by personal interview, or both, the names and qualifications of men best fitted for the important position under consideration.

The authorities thus consulted form a representative and disinterested body of experts. Their homes are widely distributed geographically and extend from Maine to California and from the northern to the southern boundary of our country. Their affiliations are varied. From nearly all we have had most hearty response. Among the names of those consulted are:

James R. Angell, Dean University of Chicago.
Prof. W. C. Bagley, Carnegie Foundation, New York City.
Edward A. Birge, President University of Wisconsin, Madison, Wis.
W. H. Burnham, Clark University, Worcester, Mass.
Nicholas Murray Butler, Columbia University, New York City.
John Dewey, Columbia University, New York City.

E. C. Elliot, Chancellor University of Montana, Helena, Mont.
Prof. Frank J. Goodnow, Johns Hopkins, Baltimore, Md.
Frank P. Graves, University of Pennsylvania, Philadelphia.
Prof. Paul H. Hanus, Harvard University, Cambridge, Mass.
Arthur T. Hadley, President Yale University, New Haven, Conn.
A. Ross Hill, President University of Missouri, Columbia, Mo.
Thomas F. Holgate, President Northwestern University, Evanston, Ill.
W. A. Jessup, President University of Iowa, Iowa City, Ia.
C. H. Judd, University of Chicago.
Edmund J. James, President University of Illinois, Urbana, Ill.
Harry Pratt Judson, President University of Chicago.
Prof. E. P. Cubberley, Leland Stanford Jr. University, California.
A. Lawrence Lowell, President Harvard University, Cambridge, Mass.
Prof. E. C. Moore, State Normal School, Los Angeles, Cal.
Prof. M. V. O'Shea, University of Wisconsin, Madison, Wis.
Carroll G. Pearse, President Milwaukee State Normal School.
Henry S. Pritchett, Carnegie Foundation, New York City.
Charles A. Prosser, Federal Bureau of Vocational Education, Washington.
James Earle Russell, Dean Teachers College, Columbia University, New York.
David Snedden, Teachers College, Columbia University, New York.
Henry Suzzalo, President University of Washington, Seattle, Wash.
Andrew F. West, Princeton University.
Benjamin I. Wheeler, President University of California, Berkeley, Cal.
From these and others we have received eighty-one letters.

From the evidence presented and considered, the man most highly recommended and the one who in the judgment of the Commission is the best available man to fill the position of Superintendent of the Public Schools of Chicago is Charles E. Chadsey of Detroit, Mich. He is the first choice of the members of the Commission, and it is gratifying to state that the Commission unanimously recommends him for the position at a salary of eighteen thousand dollars a year.

We further unanimously recommend the appointment of P. A. Mortenson as Associate Superintendent at a salary of twelve thousand dollars a year.

Charles E. Chadsey, born Nebraska City, Neb., October 15, 1870; A.B. Leland Stanford Jr. U., 1892; A.M., 1893; A.M. Columbia, 1894; Ph.D., 1897; (Hon. Litt. D. Denver University, 1909). Served as principal of Durango, Colo., High School, 1894–7; Superintendent of Schools, Durango,

1897–1900; Superintendent of North Side Schools, Denver, 1900–3; Assistant Superintendent of Schools, Denver, 1907–12, when he was selected to take charge of the public schools of Detroit, Mich., where he has made a record that has brought his work to the attention of the most prominent educators of this country.

Mr. Chadsey combines scholarly and executive qualities to an unusual degree. Highly trained, he has shown practical judgment and executive ability adequate to the requirements of a very responsible position. He has a strong personality and ability as public speaker, besides a knowledge of modern educational aims and methods, with the ability to secure their practical realization. A tolerant man of highest character and sincerity—has made good in every position from high school teacher to superintendent—who will maintain the system without friction.

We believe that no man, regardless of his experience, could assume charge of a school system so large as Chicago's and place it in the position it deserves, unless he is free to devote practically all of his time to the general supervision of the system, organizing an educational program in the carrying out of which he can call to his assistance one familiar with local conditions. Hence, our recommendation of Mr. Peter A. Mortenson as Associate Superintendent.

Since Mr. Mortenson has been connected with our Public School System his splendid achievements, more especially at the Parental School, and the impression he has made in the Superintendent's Office, and upon the teachers, all justify his being placed close to the top. For with Mr. Mortenson's assistance Mr. Chadsey should in a comparatively short time make such progress as would not be possible unless he had associated with him one thoroughly in touch with our school conditions.

During the course of our investigation certain facts relating to our Public School System have necessarily been brought to our attention. Two of them seem to us to be of such importance that we take the liberty of presenting them to you.

It is the unanimous opinion of the members of the Commission that the salary of the average teachers in our public schools at the present time is too low and that it should be, if possible, increased. Especially is this true of the pension now allowed to retiring teachers. It is but four hundred dollars—it should be nearly double that amount. Not only is a teacher entitled to a competent living wage after devoting a life of service to the community and to society in general, but nothing would tend to clear the service of inefficiency caused by old age more than an increased pension.

CIVICS IN THE SCHOOLS

The National Industrial Conference Board has issued a pamphlet entitled "A Case of Federal Propaganda in Our Public Schools." This is an attack on the *Lessons in Community and National Life* published last year by the Bureau of Education.

The gist of the attack is as follows:

> The greater part of the material in the *Lessons* is of the elementary sort which one would naturally expect to find in textbooks, and is not open to criticism. There is, however, considerable material of a distinctly propagandist character which has no proper place in a schoolbook.
>
> Ostensibly these *Lessons* are for use in the presentation of social and political economics in the public schools, but it is obvious from even a casual reading that they are also intended for older readers. In so far as they were prepared for public school children their issuance by a government department is highly objectionable, since some of the material contained in them gives to the growing youth at its most plastic age an impression which is extremely partisan, inexcusably incomplete, and frequently misleading. To the extent that they are intended for readers of voting age they represent an abuse of the function of governmental publicity almost as objectionable.

Some of the passages in which sections of the *Lessons* are quoted and described as objectionable are as follows:

> As an illustration of the propagandist character of much of the material, the following paragraph from a lesson on "The Family and Social Control" may be cited:
>
> "The community is much concerned and pays a great deal of attention through its laws to the upbuilding of the family. The prohibition of night work, the eight-hour day, and the minimum wage for women are necessary to protect the health of the mothers of the next generation."
>
> In the same paragraph is the statement that:
>
> "Those in favor of the minimum wage for men say that men should receive a wage sufficient to marry and rear a family without the dangers that come from insufficient employment and wages."
>
> A second illustration of this propagandist spirit is found in such general statements as the following:

"And we must not overlook the part which society as a whole is playing. Minimum-wage laws, factory-inspection laws, provisions for social insurance, workmen's compensation acts, provisions for vocational education, laws restricting the number of immigrants who are admitted to the country, civil-service laws providing for stability of employment, make a fairly long list of the ways in which society is helping. The list is, however, only a part of the great protective codes which are being developed by a society which is becoming conscious of the need of safeguarding its workers."

In the course of numerous endorsements of social insurance the student is informed that:

"Social insurance helps to maintain normal family standards. Compensation for industrial accidents provides for the family of a workman killed or crippled by an accident. A campaign is now being waged for health insurance because it has been shown that sickness of the wage-earner often causes poverty in the family and consequent breaking down of family organization."

There are several answers which might be made to this pamphlet. One would bring out the fact that the War Industries Board, which had in its membership a liberal representation of the same manufacturers' associations which are sponsors for the pamphlet, repeatedly enunciated principles which make the *Lessons* sound like the bible of the conservatives. A second answer might be made up of quotations from the *Lessons* which could be found in abundance and would show that they are filled with the most impressive examples of co-operation and of the need of co-ordinating capital and labor. A third answer might call attention to the fact that in everyday life school children are brought into contact with discussions of the type that the pamphlet under consideration would bar from the classroom.

Unfortunately the task of introducing a study of industry into schools is not accomplished through an answer to the objections of a few manufacturers. Theirs is only one type of social conservatism. The other type which must be combated is the conservatism of teachers and other school officers. They

find that the course of study is now full, that the program of the schools cannot be readjusted to make room for new materials, that pupils cannot be graded as easily on such matters as in the conventional studies. Teachers will have to be persuaded by a virgorous presentation of the demands on the part of society for a study of industry. If manufacturers attack material which is intended for use in the schools, it will be easy for conservative teachers to find reasons for leaving the course of study as it is.

To both of the groups of conservatives referred to above there is coming in the near future a shock of revelation. Manufacturers are going to realize that social discussions belong in the public schools, and teachers are going to discover that pupils will be all the more interested in their studies if there is an intimate connection pointed out between these studies and the life of industrial society into which graduates pass after their school work is done.

MORAL AND CIVIC EDUCATION IN CANADA

Canada has taken steps to introduce a new type of study into her public schools. The following statement describes this movement and the conference which is to be held in August:

> In common with the rest of the civilized world, Canadian communities have been profoundly impressed, through the revelations of the great war, with the necessity of emphasizing in the strongest possible way the educational activities that make for the formation of character and that tend to promote a high standard of individual and national life. While it is recognized that the ethical aim has always been present in the schools, it is well known that the diverse racial and religious elements of which our people are composed have hitherto made any attempt at organized moral education difficult. Misunderstandings, mutual distrust, inability to agree on content or method have prevented the co-operation necessary to effective action. It is believed, however, that many prejudices that formerly obscured essentials have disappeared as a consequence of the war and that the time is

opportune for emphasizing the importance of character training as a preparation for citizenship. At the outset of the great struggle from which we have just emerged, the world was confronted with a people of some sixty millions thinking and feeling as one man in a conspiracy to subject the world to the domination of the German race. This unity of thought and purpose was the outcome of carefully planned and energetically conducted educational propaganda beginning in the elementary schools and carried on by university, church and press. If the energy of an entire people could be enlisted and directed by means of its educational agencies towards an evil purpose, it is believed that the same factors would be even more effective if set in motion for a righteous end. In this belief a number of gentlemen, active in the professional, business and educational life in Winnipeg, resolved to come together to discuss the matter, and determine what action, if any, should be taken. On the invitation of His Honor Sir James Aikins, a meeting for this purpose was held at Government House and the progress of the discussion showed that all present were deeply interested, profoundly impressed with the need, and fully persuaded of the possibility of making a forward movement in education. It was recognized that any movement of the kind to be effective should be national in its scope and should command the interest and sympathy of all the people in every part of the Dominion without distinction of race or creed. To ascertain the extent to which such interest existed or could be aroused, a central committee was organized. Five gentlemen undertook to contribute one thousand dollars each for preliminary expenses and steps were then taken to present the matter to groups in the larger cities throughout Canada. Some forty cities and towns were covered, and local committees formed. Without going into detail, it may be sufficient to say that great interest was manifested at every point and that the various discussions led to the determination to call a national conference to discuss the question of moral education and training for citizenship. The purpose of the conference is to stimulate public interest so as to accentuate character training in the schools and other institutions. It is further hoped that one of the outcomes may be the establishment of a foundation for the study of the whole problem, the result of this study to be made available for educational workers everywhere.

The Rotary clubs undertook the finance and the necessary funds are in sight for the holding of the conference. The sum of $70,000 has been pledged for the purpose.

A FEDERAL TEACHERS' AGENCY

The Department of Labor had an elaborate plan for the organization of a federal bureau to secure employment for teachers and to supply school superintendents and others looking for teachers with suitable candidates. The experiment has been tried in a number of states of organizing public agencies to do this work which is usually committed to private commercial agencies. In working out the plans for a federal bureau the Department of Labor and the Bureau of Education had made arrangements that the Bureau was to deal with special features and more important administrative positions while the Department of Labor was to deal with all elementary and high-school positions. The failure of Congress to appropriate the necessary funds to carry on the arrangement has put an end to most of the activities of the Department of Labor although one or two centers are being carried on through private subscriptions. It is confidently expected that the new Congress will give the funds necessary to go on with the arrangement.

In the meantime the plan is of such importance for future reference that the circular sent out by the Department of Labor may be published in full. It is to be understood that this plan is not now in operation as the Department had expected it would be. The statement is therefore merely an account of what the Department had planned to do and what it expects to accomplish sometime in the future.

Can the United States Department of Labor put competent teachers in touch with school and college vacancies so effectively as to justify its entry into the field of teacher placement? If it can, every educational institution and every teacher is interested in the proposal.

When the armistice was signed, the United States Employment Service of the Department of Labor was called upon to place returning soldiers in civilian occupations. Among these soldiers were many teachers. Those in charge of the placement work soon realized that while the Employment

Service had the physical equipment in the way of offices, etc., it needed a different type of personnel to handle teachers than to care for mechanics. They likewise realized that the Service could not be confined to returning soldiers since there were many competent civilian teachers also seeking positions whose exclusion from this opportunity would be unwise from every point of view. A new division of the Service was therefore established—"The Teachers' Division of the Professional and Special Section," through which without charge any institution might seek teachers of any grade, and competent teachers regardless of grade might find opportunities to teach. The division is now operating on a modest scale in several states.

The fundamental principle of the Teachers' Division is to secure a competent candidate for the position, and secondarily only to secure positions for the candidate, the aim being to improve the schools through expert placement and in the present emergency to bring about a normal readjustment of occupation through the placement of returning soldier-teachers and discharged workers.

The country is being divided into zones corresponding to present educational divisions. Zone offices will in all probability be located in San Francisco, Chicago, Atlanta, Boston, and some other eastern city not yet determined. So far as necessary and possible state offices will be established to supply local needs, and to act as a reservoir by means of which the zone offices can more equally distribute the teacher supply. Zone offices will be clearance points between sections of the country and will contain information about high-grade teachers and positions. The Employment Service furthermore is seeking the co-operation of the Bureau of Education, which in conjunction with the zone offices can more capably handle certain highly specialized types of teachers from a central registry in Washington, and can give valuable advice as to educational standards, placement policy, and personnel.

The work in the state offices will be in charge of competent persons who will establish co-operative arrangements with the appointment office and other appropriate departments of local institutions—universities, colleges, normal schools, etc.—and with state and school authorities. A careful investigation will be made into the qualifications of all persons seeking positions. The resulting information will be available to the school or college official for his assistance in determining the capability of the candidate. Both state and zone managers will be men of such capacity in respect to educational experience and administrative ability and standing in the community that educational institutions and teachers will confidently turn to them for assistance.

In this way information as to teacher supply and demand will be centralized and made available without expense to institutions and teachers throughout the country. It is hoped that, as a result, the burden of teacher and school officer alike will be lightened. Inasmuch as teachers are in great demand, and considering that they are largely public servants, poorly recompensed for their services, and that these services are not limited to state lines, there would seem to be entire justification for the Government's proceeding for the purpose and in the manner proposed. Provided the Teachers' Division of the U.S. Employment Service adheres to this purpose and wisely selects its agents, it will render that public service by which alone it can hope to succeed.

Two zone offices are now in operation—one at Chicago and the other at Boston. Six state offices are now located at Columbus, Ohio, San Antonio, Texas, Denver, Colorado, Topeka, Kansas, Great Falls, Montana, Lincoln, Nebraska.

Communications concerning this subject may be addressed to the Teachers' Division, Professional and Special Section, U.S. Employment Service, at any of the above places and at Washington, D. C.

SELECTING PRINCIPALS

Boston has adopted the plan of selecting school principals which was formulated after careful investigation by the Board of Superintendents. The plan is described in full in the following minute taken from the proceedings of the School Committee:

A communication was received from the Board of Superintendents, under date of January 6, 1919, submitting a plan for the rating of candidates for promotion to the rank of principal of an elementary school district, substantially as follows:

1. The Board of Superintendents shall establish a rated list of all candidates eligible for appointment to a principalship of an elementary district. At their own request, candidates may not be so rated.

2. The Board of Superintendents shall prepare two separate lists, one for men, and another for women.

3. These rated lists shall be the result of the evaluation of the concrete and objective evidence that may be secured from all available sources.

4. The ratings shall be upon a scale, with 1,000 points as a maximum, these points to be distributed as follows:

a. Educational preparation for teaching, experience in teaching . . . 100 points

(The basis of this inquiry shall be Form 264, revised by the Board of Superintendents to suit this special purpose.)

b. Administrative, supervisory and executive work . . . . . 200 points

(The basis of this inquiry shall be Form 265, revised by the Board of Superintendents.)

c. Professional interest and growth . . . . . 200 points

(The basis of this inquiry shall be Form 266, revised by the Board of Superintendents.)

d. Classroom teaching . . . . . 500 points

(The basis of this inquiry shall be Form 267, revised by the Board of Superintendents.)

Total . . . . . 1,000 points

The present practice of having the classroom teaching of candidates evaluated by the Master of the school, by the Assistant Superintendent in charge, and by another Assistant Superintendent designated by the Superintendent, is to be retained.

5. First Rating. When the lists are made for the first time the Board of Superintendents shall evaluate the work of all persons who are eligible for appointment to the position of principal, except individual candidates who request of the Board of Superintendents that they be not so rated. The names of those who secure a high rating (the standard thereof to be determined later) shall be published in the same manner as are other authorized eligible lists.

6. The names of candidates securing a rating below the fixed standard shall not be published, but their rating shall be accessible to the individuals so rated and to the officers of the School Committee.

7. Subsequent Ratings. The group of persons whose names appear upon the published eligible lists shall be re-rated biennially. All other candidates shall be re-rated at the same time, but only at their request, and the names of those so rated shall appear in the lists when next published.

8. The names of candidates who by examination secure the certificate of qualification VI. Elementary School, Master, subsequent to May 1, 1919, shall not thereupon be merged in the rated lists, but shall appear in the lists published immediately subsequent to their examination and certification.

9. Seniority of appointment shall be given favorable consideration by the Board of Superintendents in the evaluation of work, provided that the service performed has been continuously progressive and efficient, as evidenced in Forms 264, 265, and 266.

10. The names of candidates shall be arranged upon the lists in the order of merit as determined by the numerical ratings, i.e., the name of the person securing the highest rating shall appear first, the name of the person securing the next highest shall appear second, and so on down the list.

It is proposed that in making appointment from these lists, selection shall be made by the Superintendent from any one of the three names that stand highest on the list, in accordance with universal Civil Service practice.

The Board of Superintendents is strongly of the opinion that it is educationally and administratively inadvisable to limit appointment to the single individual whose name appears first upon the list.

11. If these recommendations receive the approval of the School Committee, the Board of Superintendents purposes to so organize its work as to have the original merit list ready for presentation to the School Committee not later than June 1, 1919. Subsequent lists shall be prepared and similarly presented every second year thereafter.

The communication was placed on file, the plan approved as presented and it was

Ordered, That the Board of Superintendents is hereby authorized to proceed at once to put into effect the plan submitted by it at this meeting for the rating of candidates for promotion to the rank of master of an elementary school district, with a view to presenting the first rated list of candidates eligible for such promotion before the close of June, 1919.

WRITING LOCAL HISTORY

Commissioner Kendall has issued a suggestive bulletin to the teachers of New Jersey from which we quote the first paragraphs:

The work that schools have done and that local communities have done for the winning of the war has been colossal. Steps should be taken to preserve a record of this work. If this is not done—and done now—the chances are that it will not be done, and this record will be handed down to the next generation and succeeding generations only by means of tradition. These contributions of schools and communities are too important to be treated in this way.

Wherever no local provision is being planned for a record of this work I earnestly recommend and urge that the schools take the initiative and the lead.

There are two ways in which this can be done.

First, the upper classes in the high schools, under the leadership of an English teacher and a history teacher, should write a brief record of the war activities of the community and of the school, the text being "What Jonesville contributed to the winning of the war," or "What the Jonesville schools contributed to the winning of the war."

After a plan is made, the pupils participating in the making of the plan, the teachers could assign to each pupil a given topic or subject or chapter as a part of his work in English and history.

For instance, one pupil could be assigned the work of the Red Cross in the community and the school. He or she could consult local newspapers, officers of the organization, and others who have known at first-hand about the activities, and make this the foundation of his particular chapter or section.

Another could speak of the food conservation movement. Another of what the school and town did, and the way in which it was done, in the raising of funds for the Liberty Loan.

Another pupil could catalog the names of the young men who went into the service, giving a brief biography of those who lost their lives in the defense of their country and civilization. And the women should not be forgotten—those who went abroad in the various branches of the service—and so on and so on.

The whole could be put together, preferably in typewriting, or perhaps in printed form. I am sure that the board of education would contribute toward putting the whole record into well-bound duplicate volumes which could be carefully preserved. The expense would not be great, and the commercial department, where one exists, will be glad to do the typewriting. One of these volumes should be kept at the school and the other should be in the possession of the public library. Perhaps the art department could bind the volumes.

This kind of work would afford valuable training in English and history, and the young people would find in it a motive for their work in these subjects. It would of course tax the ingenuity of the teachers, but teachers are not slackers about work.

WYOMING STATE EDUCATIONAL ORGANIZATION

Wyoming appointed a commissioner of education two years ago. A month ago he resigned because the political forces in the state were about to pass legislation which made it

impossible for him to carry on the operations of the state office in a way that seemed to him to serve the interests of the state.

Mr. Creager's letter in resigning is as follows:

February 19, 1919.

Mr. S. A. Huston, Chairman, State Board of Education, Cheyenne, Wyo.

My Dear Mr. Huston: Two years ago I was appointed by your board to the office of commissioner of education. With the wise direction and staunch support of the board, I undertook the organization of the work of the newly created state department of education. We have at all times been encouraged by the hearty support of the school people of the state. My recent report to your board has made known to the public the work that has been accomplished.

Just prior to the convening of the present legislature, rumors arose to the effect that the new legislation under which we were operating was unconstitutional. Through conferences held at that time with the governor, the conclusion was reached that this apparent conflict with the constitution could be best remedied by a very simple amendment giving the state superintendent the power to appoint, with the approval of the governor, the state board of education. This provision has since been incorporated in House Bill 154.

We had thus supposed the matter settled; but to our utter amazement a bill now known as the Riner bill, or Senate File 36, arose. So radical were its provisions that the contest which has been in progress the past month at once ensued.

I need not rehearse here the provisions of the Riner bill, except to say that it proposes to tear down all that the school people of the state have toiled so earnestly to build up in way of constructive legislation. We had hoped to divorce education from politics; but this bill sets up a political autocracy in state school administration that cannot be excelled. In the name of mere decency in school administration, I take genuine pleasure in scorning to become a part of such a scheme.

To attempt to justify the Riner bill under the plea of repairing the constitutional conflict is the grossest and most palpable pretense in view of the fact that House Bill 154, drawn in accord with the principle originally agreed to by the governor, has been pronounced absolutely constitutional by four of the best lawyers in the state. The fact is, the Riner bill aims at political power, not constitutionality.

The retrogressive policy initiated by the Riner bill carried in its destructive path our proposed rural school legislation, thus sacrificing to political ambition the future educational welfare of our little children in the country. To make destruction a masterpiece, the governor has vetoed the Americanization bill and the vocational education bill, both of which passed both houses without a dissenting voice. Here, again, the dear old ghost of constitutionality was invoked, although several attorneys declare both bills entirely constitutional.

In vetoing the Americanization bill, Wyoming has been placed on record as opposing one of the leading principles brought to the surface by the world war. In vetoing the vocational bill, she will be left standing alone among states as the only state not granting state aid for vocational education. The burden of financing this expensive form of education cannot be borne by the local communities.

If we cannot establish vocational education in Wyoming when every other state in the union is doing so under federal co-operation; if Wyoming cannot go forward after the war to Americanize her foreigners when the nation is urging this upon all the states; if we can do nothing to reduce illiteracy in our state whose increase of illiteracy within the last ten years has exceeded that of all other states except Washington; if we can do nothing for the betterment of our schools for country boys, and girls; then, I hardly see what there is left for the state department of education to undertake.

Because of these reactionary and destructive measures, the personal responsibility for which is well understood, I submit to you, at this time, my resignation, to take effect at such date as may be determined by the State Board of Education.

Sincerely yours,

J. O. CREAGER
Commissioner of Education

A SERIES OF DIAGNOSTIC TESTS IN ARITHMETIC

WALTER S. MONROE

Director of the Bureau of Co-operative Research, Indiana University

Ideally a series of diagnostic tests on the operations of arithmetic should yield measurements of all the significant abilities within that field. It has been stated upon the basis of scientific investigations that "there are as many separate types of adding ability as there are different types of examples to be added." In the light of existing studies this general statement appears to be true not only for addition, but for all of the operations both with integers and with fractions. Thus the first step in constructing a series of diagnostic tests is the determination of the significant types of examples.

One type of example in each of the operations with integers is contained in the tables. The several combinations in an operation—for example, addition—are not equally difficult, but they call for the same type of ability: a fixed association between two written number symbols and the symbol which represents their sum. In an example such as $\begin{array}{r} 7 \\ 4 \\ \hline 9 \end{array}$ a different type of ability is required. The response must be given to $\begin{array}{r} 7 \\ 4, \end{array}$ and with this partial sum 9 must be associated additively to secure the total sum. When the number of figures to be added is increased, the example is changed, but it is questionable whether a four-figure column is essentially different as to type from a five-figure column. On the other hand, there is no doubt that a twelve-figure column represents an essentially different type of example from a four- or five-figure column.

The length or span of attention is the additional factor which enters into the long-column addition.

Courtis, the author of the Standard Research Tests, has identified the following types of examples in the operations with integers:

Addition: (1) addition combinations; (2) single-column addition of three figures each; (3) "bridging the tens," as 38+7; (4) column addition, seven figures; (5) carrying; (6) column addition with increased attention span, thirteen figures to the column; (7) addition of numbers of different lengths.

Subtraction: (1) subtraction combinations; (2) subtraction of 9 or less from a number of two digits, without "borrowing;" (3) same as the second, but with "borrowing;" (4) subtraction of numbers of two or more digits involving borrowing.

Multiplication: (1) multiplication combinations; (2) multiplicand two digits, multiplier one digit, and no carrying; (3) same as number 2, but with carrying; (4) long multiplication, without carrying; (5–8) zero difficulties; four types: $\begin{array}{r} 560 \\ \underline{40} \end{array}$ $\begin{array}{r} 807 \\ \underline{59} \end{array}$ $\begin{array}{r} 617 \\ \underline{508} \end{array}$ $\begin{array}{r} 703 \\ \underline{60} \end{array}$; (9) long multiplication with carrying.

Division: (1) division combinations; (2) simple division, no carrying; (3) same as number 2, but with carrying; (4) long division, no carrying; (5–6) zero difficulties; two cases: $71\overline{)48990}$, $31\overline{)9362}$; (7) long division, with carrying, "first case, the first figure of the divisor is the trial divisor and the trial quotient is the true quotient:" $63\overline{)4536}$; (8) "second case, where the trial divisor is one larger than the first figure of the divisor, but the trial quotient is the true quotient:" $49\overline{)3087}$; (9) "third case, where the first figure of the divisor is the trial divisor, but the true quotient is one smaller than the trial

quotient:" $63\overline{)5607}^{89}$; (10) "fourth case, where the first figure of the divisor must be increased by one to obtain a trial divisor and the second trial quotient must be increased by one to obtain a trial divisor and the second trial quotient must be increased by one to get the true quotient:" $36\overline{)2844}^{79}$.

Except in the case of addition, where the type of example is dependent upon it, Courtis does not specify the size of the example. Thus apparently in multiplication, for example, the number of digits in both the multiplicand and the multiplier may be increased without making any essential change in the type of example. In exceptionally long examples the span of attention might become a determining factor as it does in addition. However, such examples probably have no place in the regular work of the elementary school.

In the field of common fractions Kallom[1] has analyzed the addition of two fractions and verified his analysis experimentally. The types of examples depend upon the relation existing between the denominators of the two fractions and upon the form of the answer. The denominators may be the same, in which case the fractions are called *similar*. If the denominators are different, the fractions are *dissimilar*. There are three types of dissimilar fractions: (1) "Least common denominator is the denominator of one of the fractions." (2) "Least common denominator is the product of the denominators." (3) "Least common denominator is found by factoring." The result of adding the two fractions may be in its simplest form, that is, a proper fraction and in its lowest terms. This is the *non-reducible* case. There are three *reducible* cases: (1) a proper fraction not in its lowest terms; (2) an improper fraction in its lowest terms; (3) an improper fraction not in

[1] *Arithmetic*. Bulletin No. 7, Department of Educational Investigation and Measurement, Boston.

its lowest terms. Two of the possible combinations of these conditions were found not to exist, leaving 14 types of examples in the addition of two fractions.

For practical purposes, Kallom decided that certain types, such as 1/2+3/8 and 5/9+1/9, could be considered as included in the type 1/2+3/10. By this means he chose the following six types, which were used in the final series of tests.

ADDITION OF FRACTIONS

Test 1

(1) $\frac{1}{4}$ / $\frac{1}{4}$ (2) $\frac{3}{14}$ / $\frac{1}{14}$

Test 2

(1) $\frac{1}{8}$ / $\frac{1}{6}$ (2) $\frac{2}{7}$ / $\frac{3}{14}$

Test 3

(1) $\frac{3}{5}$ / $\frac{11}{15}$ (2) $\frac{5}{6}$ / $\frac{1}{2}$

Test 4

(1) $\frac{1}{7}$ / $\frac{9}{10}$ (2) $\frac{7}{9}$ / $\frac{1}{4}$

Test 5

(1) $\frac{1}{10}$ / $\frac{1}{8}$ (2) $\frac{4}{9}$ / $\frac{5}{12}$

Test 6

(1) $\frac{1}{6}$ / $\frac{9}{10}$ (2) $\frac{5}{6}$ / $\frac{3}{8}$

There is available no similar study of the other operations with common fractions. In subtraction all of the conditions with reference to denominators and the result exist except the case of the result in the form of an improper fraction. This would give seven types, since one combination of conditions, the reducible result with the least common denominator the product of the denominators, would not exist. Following Kallom's plan of considering certain types included in others, it appears that these four types might cover the field of subtraction:

(1) $\frac{3}{5}-\frac{3}{10}=$ (3) $\frac{3}{4}-\frac{1}{8}=$
(2) $\frac{3}{5}-\frac{4}{15}=$ (4) $\frac{5}{6}-\frac{2}{15}=$

In multiplication and division of two common fractions the relation of the denominators is not a factor, and therefore it appears that there are only four types in each operation: (1) result a proper fraction and in its lowest terms; (2) result a proper fraction but not in its lowest terms; (3) result an im-

proper fraction but in its lowest terms; (4) result an improper fraction and not in its lowest terms. In accordance with Kallom's plan of combining types, it seems reasonable to consider that the third type may be included in the fourth.

Assuming that types can be combined as they were by Kallom in addition, we have 16 types of examples for the operations with two fractions. In addition to these, there are the types of examples involved in the addition of three or more fractions and in all of the operations with fractions, mixed numbers, and integers in their several combinations. It would seem reasonable to expect that at least 20 additional types will be found in these fields even after certain types are considered included in others.

In the field of decimal fractions there has been one study[1] to determine the types of examples which indicates "that the decimal point is not placed in quotients by means of a general rule or general ability, but by means of several specific abilities." Upon the basis of this conclusion and the types of examples in the tests used in the study it appears probable that each combination of divisors such as 5, .5 and .05 with dividends such as 16.2, 162, 1.62, and .162 constitutes a type. If this is the case, there are a number of types of examples within the range of school work, probably between 20 and 30. (It should be remembered that this statement is largely in the nature of a hypothesis based upon a few facts.)

In the field of multiplication of decimal fractions there are available no data to indicate what constitutes a type example. By analogy, we might conclude that the determination of types was similar to that in division. There is some evidence that this may not be true. In addition and subtraction there is likewise no available study of the nature of ability in the case of decimal fractions, but the most reasonable hypothe-

[1] WALTER S. MONROE, "The Ability to Place the Decimal Point in Division," *Elementary School Journal*, XVIII (December, 1917), 287-93.

sis appears to be that these two operations with decimals involve no abilities different from the abilities involved in the same operations with integers except such as occur in the writing of the numbers to be added or subtracted.

It was stated in the beginning of this report that the *significant* types of examples must be determined. The analysis given above simply means that the types enumerated probably exist, but tells us nothing about their importance. That certain types, such as the addition tables, short-column addition, and the multiplication of two fractions, are socially important is an assumption that probably will not be disputed. On the other hand, some may question the social importance of some of the types of examples. For the benefit of such persons it may be pointed out that this report does not deal with the determination of the degree of the social importance of the several types enumerated. They are universally included in the course of study for arithmetic, and, for the present at least, pupils are being asked to learn to do them. It is believed that a series of tests which will effectively diagnose this field will be of service to the teacher. The determination of the types of examples which are socially important is, however, fundamental, and as reliable studies on the determination of minimum essentials become available it is not unlikely that the foregoing list of type examples will need to be modified.

The preceding survey of the operations of arithmetic indicates that there are probably not fewer than 86 significant types of examples (integers, 30; common fractions, 36; decimal fractions, 20 to 40). This total does not include the specific abilities involved in the writing and reading of numbers, in the tables of denominate numbers and in the solution of problems. A complete diagnosis of a pupil's abilities to do the operations of arithmetic would involve the measurement of his ability to do each of the 86 types of examples.

It is perhaps well to point out the meaning which the writer attaches to the measurement of the abilities to perform the operations of arithmetic. It is his thesis that measurement means the determination of the magnitude of the "dimensions" which are necessary to define the ability. If the ability is "one-dimensional," then its measurement involves the determination of only one magnitude. If it is "two-dimensional," then two magnitudes must be determined. In the case of the operations of arithmetic it is generally agreed that the abilities are "two-dimensional"—*rate* and *accuracy*. Thus the diagnosis of a pupil with respect to arithmetical abilities involves the determination of the *rate* and *accuracy* of a pupil's performance on each of the significant types of examples. In the case of a type of example, such as the combinations, where the degree of accuracy commonly attained is very high, the rate of performance becomes the more important "dimension." In his Series A, Courtis disregarded the "dimension" of accuracy for the tests upon the combinations because he found that an imperfect memorization of the fundamental number facts resulted in a reduced rate rather than in inaccurate answers. In the Cleveland Survey the number of examples done correctly was used as the measure of a pupil's ability. This is the product of the two dimensions, "rate" and "accuracy," of the pupil's work, and simplifies the handling of the scores in the survey of a large city system, but the plan probably cannot be successfully defended as the most helpful to a teacher.

Woody has attempted to measure arithmetical abilities in terms of one "dimension"—accuracy. If arithmetical abilities are essentially "*two*-dimensional," then the determination of one "dimension" is inadequate. In this connection it may be noted that Woody's procedure is in accord with conventional classroom instruction. It is customary for teachers to judge pupils with respect to the operations of arithmetic upon

the basis of accuracy, disregarding almost entirely the "dimension" of rate of work.

It is obviousthat "two-dimensional" measurement requires a "speed" test rather than a "power" test, because an instrument such as Woody's Arithmetic Scales yields only a "one-dimensional" measurement. Incidentally it may be remarked that it is doubtful whether this measurement is reliable.[1]

Any series of classroom tests must not require a large amount of time if it is to be used by any except the most enthusiastic workers. Thus in constructing a series of diagnostic tests in the operation of arithmetic, due regard must be had for the amount of time that will be required. Bearing this fact in mind, the writer has devised a series of 21 tests which require only 31 minutes of working time and which it is believed furnish a reasonably complete diagnosis of the operations of arithmetic, with the exception of the types of examples involving mixed numbers and integers with fractions.

The following samples from each test will illustrate the types of examples included in the several tests:

ADDITION

Test I	Test V	Test VII	Test XII	Test XV
4	7862	7	1/6+1/3=	1/6+3/5=
7	5013	6	5/6+1/2=	3/12+5/8=
2	1761	6	3/10+3/5=	
	5872	5	5/9+2/3=	
	3739	0		
		5		
		1		
		8		
		7		
		3		
		3		
		1		
		2		

[1] See WALTER S. MONROE, "An Analytical and Experimental Study of Woody's Arithmetic Scales," *School and Society*, VI (October 6, 1917), 412.

Subtraction

Test II		Test IX		Test XIII
37	94	739	1853	$3/4-2/5=$
5	8	367	948	$5/6-3/4=$

Multiplication

Test III	Test VIII	Test X			
6572	4857	560	807	617	840
6	36	37	59	508	80

Test XIV	Test XVIII		Test XX	
$2/3\times3/4=$	657.2	67.50	487.5	57.28
$2/5\times3/7=$	.7	.03	6.3	9.5
$5/12\times3/5=$	46004	20250	307125	544160

In Tests XVIII and XX the pupil is simply to insert the decimal point in the product which is given. In the samples only the variations in the multiplier are given. Each multiplier is used with three types of multiplicands (657.2, 65.72, 6.572). Thus each test includes 6 types of examples.

Division

Test IV	Test VI	Test XI	Test XVI
8)3840	82)3854	47)27589	$2/5\div1/3=$
			$4/7\div2/3=$
			$3/8\div2/3=$

Test XIX		Test XVII		Test XXI	
.4)148	*Ans.:* 37	.03)16.2	*Ans.:* 54	.47)2758.9	*Ans.:* 587
.9)65.7	*Ans.:* 73	.07)1.82	*Ans.:* 26		
.6)1.68	*Ans.:* 28	.05).415	*Ans.:* 83	8.2)38.54	*Ans.:* 47
.7).301	*Ans.:* 43	.06)7.44	*Ans.:* 124		
				79)36.893	*Ans.:* 467

Test XI is a composite test involving the four "cases" of long division given by Courtis. Since the quotient contains three figures, there are not perfect cycles.

In Tests XVIII, XIX, and XXI the pupil is to write the answer in the proper place and insert the decimal point. In Test XXI each of the three types of divisor is placed with each of four types of dividends, thus providing 12 types of examples.

Although there are only 21 tests, 61 types of examples are represented by employing the cycle principle[1] in certain of the tests. The use of this principle lessens the definiteness of the measures, but there are two reasons which may be given for its use. In the first place, it makes possible the inclusion of a much larger number of types of examples than would otherwise be possible unless the number of tests was greatly increased. In the second place, in such tests as those on decimal fractions, variety in the types of examples is necessary for the effective measurement of the ability to place the decimal point. If all examples of a test were identical in this respect, the test would probably not be an effective measuring instrument.

The series of diagnostic tests just described were given about the middle of the year in several cities. The following report is based upon the results of giving them in three Kansas cities of the first class, the Normal Training School, and one city in Iowa. Tests 1–11, integers, were given in Grades IV–VIII; Tests 12–16, common fractions, were given in Grades V–VIII; and Tests 17–21, decimal fractions, were given in Grades VI–VIII. In Table I the median scores are based upon the scores of 300 to over 450 children in each grade. (The returns from one city were not used in computing these medians because each test was given in only one grade in that city and the scores indicated unusual conditions.) These medians may be used as tentative standards, although the number of cases is not large enough to make them very reliable standards.

A study of the facts of Table I furnished evidence of differences in the character of the arithmetical abilities required to do the examples in the different tests. Test 1 consists of examples of three digits. Two additions are required for each example, and, since 30 seconds were allowed for the test, the number of additions per minute can be obtained by multiplying

[1] Because of other considerations this was modified slightly in the case of the tests in common fractions.

the score by 4. In the same way the number of additions per minute can be computed for Test 5 (addition with carrying, five figures to the column) and Test 7 (column addition, thirteen figures to the column).

TABLE I

MEDIAN SCORES FOR MONROE'S DIAGNOSTIC TESTS IN ARITHMETIC

The number of pupils taking the tests varies from about 300 to 450. Midyear scores. R = rate or number of examples done. A = accuracy or per cent of examples correct.

TEST NO.	GRADE									
	IV		V		VI		VII		VIII	
	R	A	R	A	R	A	R	A	R	A
1	8.3	100	8.5	100	10.2	100	12.0	100	12.7	100
2	4.4	68	5.3	100	7.1	100	8.0	100	8.9	100
3	3.6	62	4.1	67	5.1	79	5.5	83	6.2	84
4	2.2	49	2.4	55	3.4	68	4.3	79	4.6	88
5	4.2	55	4.5	59	5.3	63	5.4	63	6.1	66
6	2.4	44	2.8	57	3.5	74	4.7	70	4.5	100
7	3.6	60	4.0	70	4.5	75	5.0	78	5.4	79
8	3.2	38	3.9	60	4.9	64	5.9	68	6.5	73
9	3.9	68	5.8	100	6.6	99	7.5	100	8.5	97
10	2.8	50	3.7	65	4.8	70	5.4	73	6.6	82
11	2.0	47	2.3	48	2.7	59	3.1	64	3.4	68
12	....	....	4.5	42	6.7	63	8.5	67	9.8	73
13	....	....	4.8	49	6.3	60	7.4	65	7.8	71
14	....	....	7.6	51	10.8	70	13.0	80	13.5	75
15	....	....	5.2	40	7.1	56	8.0	61	8.5	59
16	....	....	6.2	46	9.3	81	12.0	61	8.5	59
17	....	....	....	....	3.5	47	3.9	56	4.7	54
18	....	....	....	....	8.3	100	9.5	100	11.0	100
19	....	....	....	....	4.7	52	5.3	64	6.0	59
20	....	....	....	....	8.5	100	10.0	100	11.0	100
21	....	....	....	....	3.9	44	4.3	52	4.6	52

Table II shows the number of additions per minute and the per cent of examples correct for these three tests.

Factors other than the type of example may affect the rate of adding. In Test 1 the time required to write the sum for every two additions would tend to reduce the rate. In Test 5 the time is 3 minutes, and it is possible that in the case of the younger children fatigue would decrease the rate. These two

factors would tend to neutralize each other, and it is probable that the differences in rates shown in Table II cannot be explained upon any basis other than that the examples of the tests are essentially different in type and require different abilities.

There are marked differences in the per cent of examples done correctly in the three tests, but a large part of this difference is due to the difference in the size of the unit of the tests. In Test 1 the unit is two additions, and in Tests 5 and 7 the units are nineteen and twelve additions, respectively. Since an example is marked wrong if it is not entirely correct, a single incorrect addition results in two additions being counted

TABLE II

SHOWING THE NUMBER OF ADDITIONS PER MINUTE AND THE ACCURACY FOR TESTS 1, 5, AND 7

TEST NO.	GRADE									
	IV		V		VI		VII		VIII	
	R	A	R	A	R	A	R	A	R	A
1	33	100	34	100	41	100	48	100	51	100
5	27	55	29	51	34	63	34	63	39	66
7	22	60	24	70	27	7	30	78	32	79

wrong in Test 1 and nineteen in Test 5. This condition makes it impossible to compare the relative accuracy of these three tests.

The other operations with integers are more complex, and similar comparisons cannot be made; but there is some evidence to show that the same conditions exist as in the case of addition.

The operations with common fractions are even more complex than the operations with integers. The pupil must first decide upon the procedure he is to employ before he can begin calculating. For example, he must decide how he is going to treat the numerators and denominators. Will he add the numerators for the numerator of the sum and the denomina-

tors for the denominator of the sum, as some pupils did on the test, or will he treat the denominators in a different manner? After the sum is obtained, it must be reduced to the simplest form. The pupil may neglect to do this or do it only partially. In carrying out the correct plan the pupil may, of course, make errors in calculation. Either an incorrect or incomplete plan or a mistake in calculation is counted as an error.

In Fig. 1 the distributions of the sixth-grade pupils are given for the five tests on common fractions. Unfortunately, the time allowed for these tests was such that several pupils, particularly in Test 14, did all of the examples. Disregarding this feature of the distributions and remembering that the five tests were given in succession to the same pupils, we find that the curves for the several tests present certain striking characteristics. For Test 13, subtraction, we have approximately the usual normal distribution, and in Tests 12 and 15, addition, there is a clear indication of the normal distribution. The curves for Test 14, multiplication, and Test 16, division, approximate a rectangular distribution more nearly than any other form. This form of distribution is even more conspicuous in the fifth grade, and it is evident in the seventh and eighth grades. An examination of the test papers shows that some pupils had difficulty in determining upon the plan to use, and as a result did only a few examples. Others decided upon a plan immediately (sometimes an incorrect one) and completed the test. This undoubtedly accounts for the unusual form of distribution.

In view of the fact that multiplication and division of fractions involve fewer possibilities as to types of examples, it is surprising that this condition should exist for these two operations and not for addition and subtraction. It may be that the explanation is that addition and subtraction receive more emphasis in teaching.

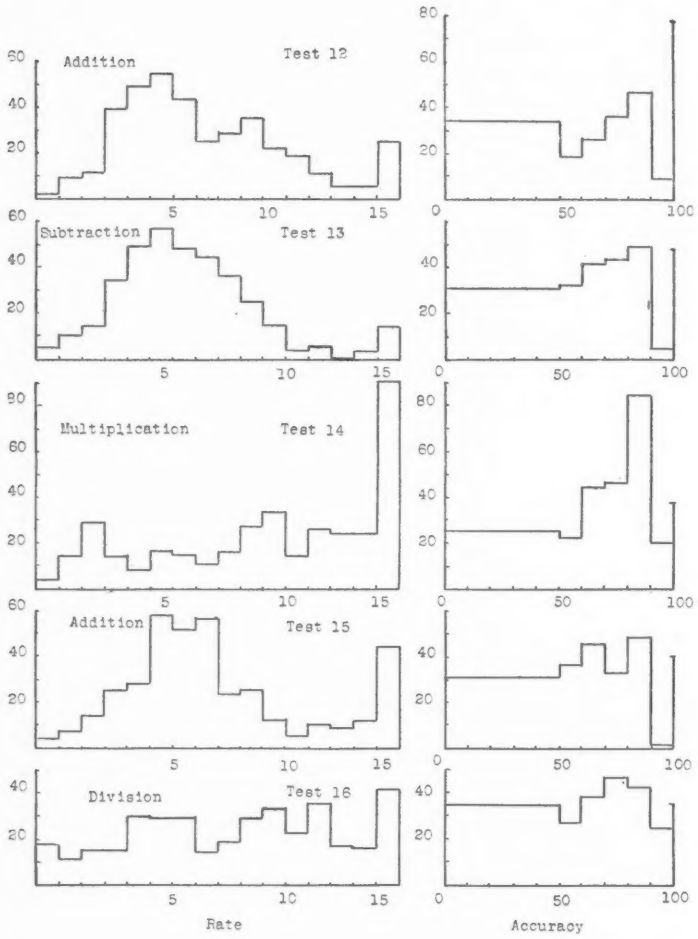

FIG. 1.—Showing distributions of sixth-grade pupils on Tests 12–16 (common fractions).

Tests 17–21 are on decimal fractions; Tests 17, 19, and 21 on division, and Tests 18 and 20 on multiplication. The most conspicuous feature of the median scores given in Table I is that in general the rate for multiplication is more than double that for division, and the accuracy is nearly double. The time allowance was the same for each test, but in the division tests it was necessary for the pupil to copy the answer. This would affect the rate, and might possibly account for the difference in rate for the two operations, but it could not account for the great difference in accuracy. Some who used the tests stated that the directions for the division tests were not clear to the pupils; but, again, it does not seem that this condition would affect the accuracy to such a large extent. The fact that there is little difference between the median scores for the several division tests indicates that failure to understand the directions would not seriously affect the scores. There seems to be no doubt that it is much easier to place the decimal point in multiplication than in division.

After studying the scores for the multiplication tests and examining some of the test papers the writer entertains some doubts concerning the soundness of his hypothesis with reference to types of examples in the multiplication of decimal fractions. It may be that there is only one essential type, but further experimental study is needed to determine this point.

The median scores of Table I slightly modified to smooth out some of the irregularities were used as a basis of the scale for Figs. 2, 3, and 4. The two scores of a test are represented graphically on the sides of an elongated rectangle, the number of examples attempted on the upper side and the number of examples right on the lower side. The scale on each line has been so chosen that the median scores of Table I for a grade fall upon a vertical line. Thus if the scores of a sixth grade were exactly standard, they would all fall on the vertical line

below VI. This, of course, makes impossible a uniform scale, but the plan has the advantage of making very obvious differences between scores and standards, and, what is probably more important, it indicates the meaning of this difference. To know in terms of the differences between standards of the successive grades the absolute amount of the difference between a score and the standard is not so important as to know the meaning of the difference which exists. For example, a difference of 1.0 in Test 11 has a greater significance than a difference of 2.0 in Test 1, because the units are larger and the time allowances for the two tests do not have the same ratio as the size of the example.

In order to simplify graphical representation, the number of examples right has been used instead of the accuracy or the per cent of examples right. This number has been calculated by multiplying the number attempted by the per cent right. The direction of the slope of the line connecting the points representing the two scores of a test indicates the relative degree of accuracy. If the line is vertical, the accuracy is just standard. If the point representing the number of examples right is to the left of the point representing the rate, the accuracy is below standard. If it is to the right, the accuracy is above standard.

In Fig. 2 the median scores of one city are represented. In this city the Courtis Standard Research Tests, Series B, have been used systematically for several years, and before their appearance Series A was used. There has been a definite effort to improve the instruction in the operations of arithmetic. The solid line running from IV represents the median scores for the fourth grade. In Test 1 the fourth-grade pupils of this city are above fifth-grade standards and nearly as good as both the fifth- and sixth-grade pupils. However, in Tests 5 and 7, which are also addition tests, the fourth-grade pupils

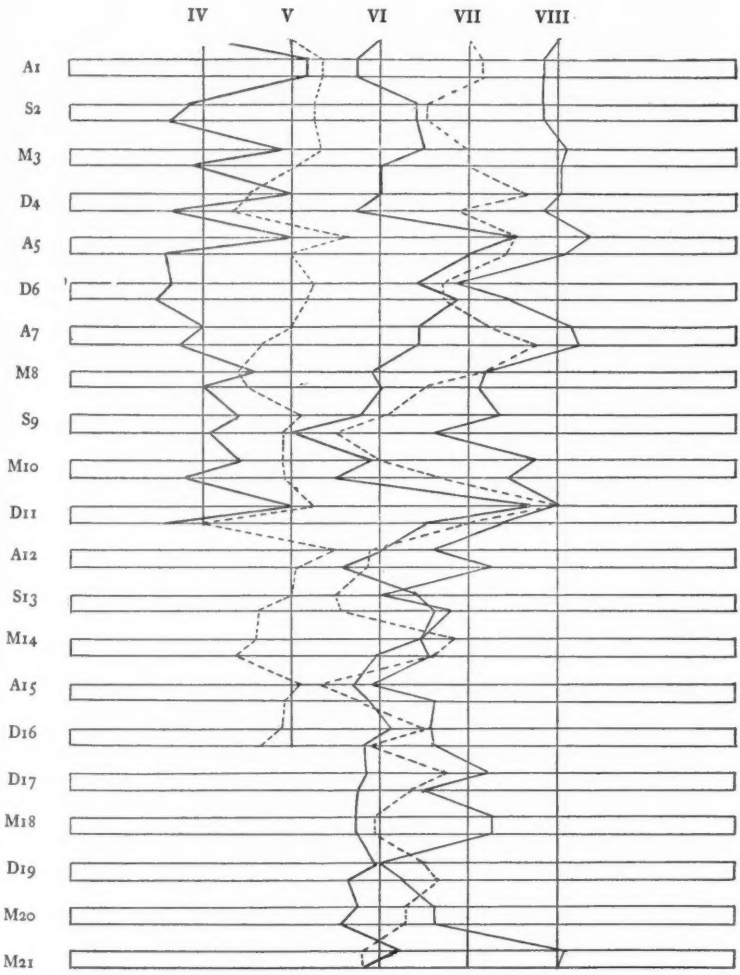

FIG. 2.—Showing the median scores for one city.

are below the fourth-grade standard for number of examples right. In the case of the sixth grade the median scores are below standard for Test 1, and above standard for Tests 5 and 7. The differences between the relative positions of the medians for the addition tests are greater than the differences between the positions of the medians for the different operations. Similar conditions exist with respect to the other operations, and this general statement seems to be justified. The differences in the abilities of the pupils of this city to do different types of examples in the same operations are as large as the differences in their abilities to do the different operations. These facts corroborate the hypothesis upon which the tests were constructed, that ability to add is not a single ability, but that there are as many different abilities as there are types of examples to be added.

It also appears from Fig. 2 that the seventh- and eighth-grade pupils are conspicuously below standard in common fractions (Tests 12–16) and in decimal fractions (Tests 17–21). One exception is the eighth-grade medians for Test 21. The existence of this condition is no doubt due to the lack of attention to the operations with fractions. This probably was caused by the attention of the teachers being focused upon the operations with integers as a result of the use of the Courtis Standard Research Tests, Series B. Thus we have a demonstration of what is likely to happen when a series of tests is used which does not cover the field of the subject. To offset the tendency to focus greater instructional effort upon those abilities which the tests measure, the limitations of the field of the series should be definitely recognized, and adequate instruction should be provided for the other phases of the subject.

In Fig. 3 there are represented the median scores for three sixth-grade classes in three different buildings in the city whose median scores are represented in Fig. 2. Classes A and

B have 33 pupils each, and Class C 23 pupils. The figure shows two significant facts: (1) certain points of non-uniformity between the medians of the three classes and (2) the non-uniform abilities of any one of the classes. In certain of the tests, such as 2, 6, 8, 15, 18, and 20, the median scores of the three classes fall within an interval of about one grade. In others, notably Tests 13 and 21, the extreme difference is much greater. Evidently the teachers of the different classes have not been placing equal emphasis upon the different types of examples. Take, for example, the addition tests (1, 5, and 7). The teacher of Class B has been placing much emphasis upon the type of example in Test 5 (short-column addition with carrying), although it should be noted that she has not neglected the other types of addition examples. On the other hand, the teacher of Class C has neglected short-column addition (Test 1), while the teacher of Class A has given much emphasis to it. In Test 7 there are represented three degrees of emphasis.

The non-uniform character of the abilities of a class is very obvious from the irregularity of the lines representing their abilities. Perfect uniformity would be represented by a straight vertical line. The non-uniformity in the abilities is due, in part at least, to the failure of the teacher to place the appropriate degree of emphasis upon the several types of examples. Some types doubtless require more emphasis than others, and it is the teacher's problem (or is it the problem of the maker of the course of study?) to determine the degree of emphasis which is needed for each type.

In Fig. 4 there are shown the scores of two sixth-grade pupils selected almost at random from Class A in Fig. 3. H. H. is a twelve-year-old boy and D. H. a girl, age not given. One should expect greater variations when dealing with the scores of individual pupils, but the variations of these scores must be surprising to one who has not studied the subject.

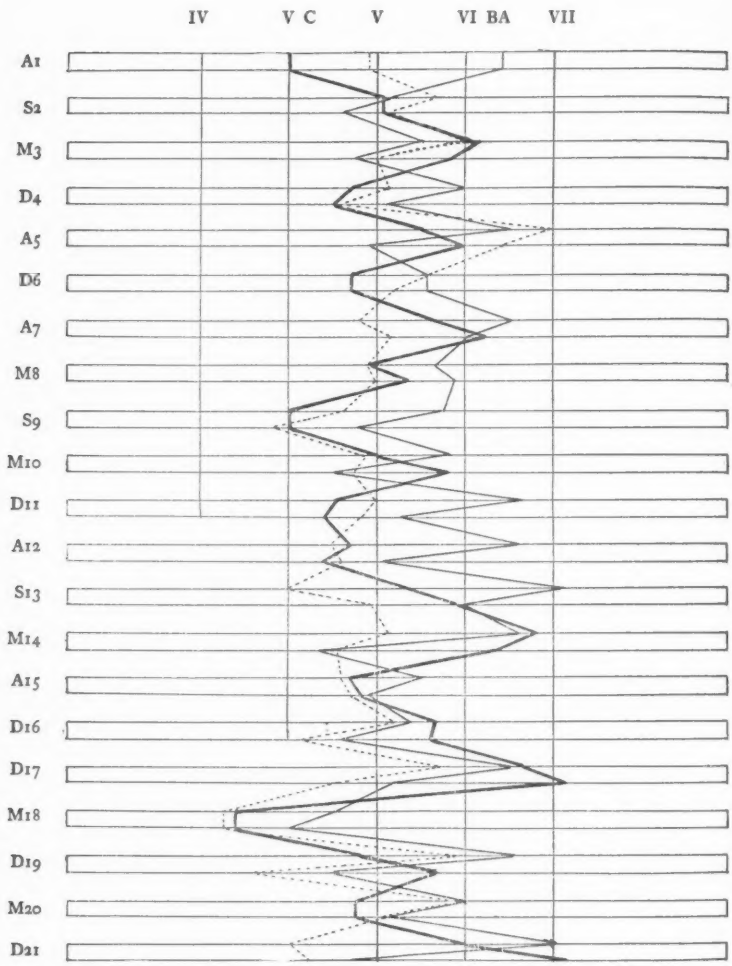

FIG. 3.—Showing the median class scores of three sixth-grade classes in the same city (Fig .2).

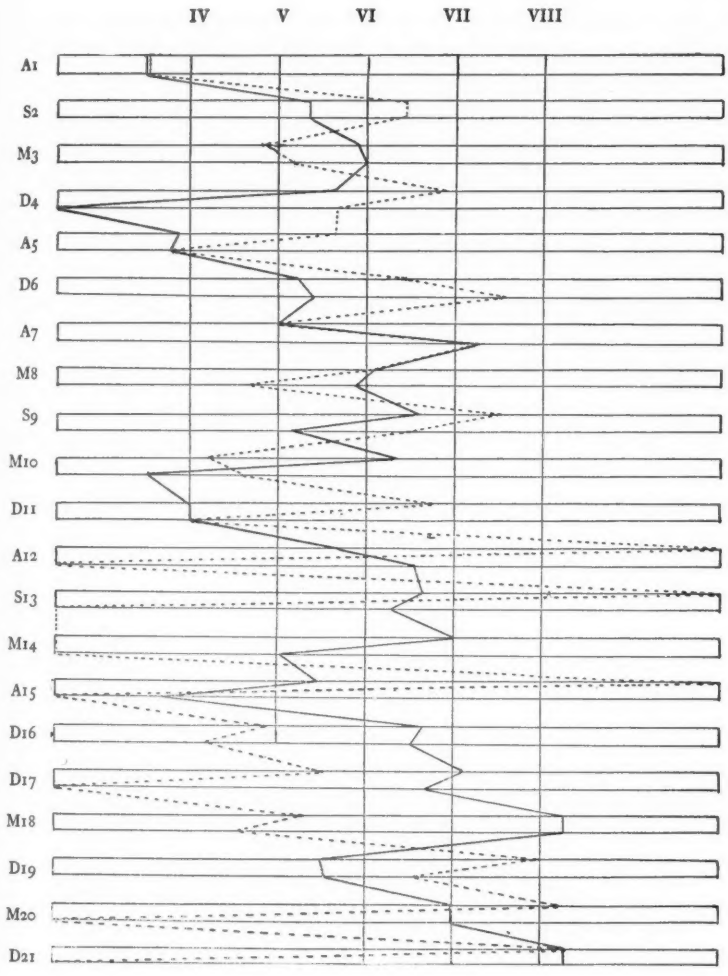

FIG. 4.—Showing the individual scores of two sixth-grade pupils in the same class.

Each of these pupils has scores on certain tests conspicuously below the standard for the fourth grade, and on other tests has scores conspicuously above eighth-grade standards.

How much of this variability is due to variation in successive performance and how much is due to actual relative differences in the several abilities, this study does not reveal. Courtis has concluded that the scores on his tests are reliable in 70 per cent of the cases. If this condition holds here, the non-uniformity of development cannot be explained by the variability of performance, and it represents a serious defect in the product of instruction in arithmetic.

It naturally occurs to one to ask if these irregularities can be eliminated. The writer has collected no data on this question for this particular series of tests. Other investigators have reported similar cases where irregular development has been dealt with satisfactorily, and there is reason to believe that much, if not all, of the irregularity shown both for classes and for individuals can be eliminated when appropriate instruction is provided.

The facts described above show that the product of arithmetical instruction is complex, much more complex than teachers and supervisors generally realize. In recent years much emphasis has been placed upon individual differences. More recently attention has been called to the fact that, although some general factors may function, ability is specific in many cases. Thus the teacher must recognize that not only do pupils of a group differ widely in ability, but also that each pupil is likely to possess each of a group of abilities in widely different degrees.

The fact that the scores obtained by using these tests show such great variations in the relative degree of ability in the different types of examples when the pupils have been measured with the Courtis Standard Research Tests, Series B, at regular intervals is evidence of the need which exists for a series of

diagnostic tests. Teachers are probably failing to place the appropriate degrees of emphasis upon the different types of examples because they are ignorant of what types exist or because they do not know the degree of ability which has been attained by their class and, much less, the degree of ability attained by the individual pupils. A series of diagnostic tests such as described in this report is valuable to the teacher in two ways: first, as a statement of the important types of examples; secondly, as an instrument of diagnostic measurement.

READING IN THE ELEMENTARY SCHOOLS OF INDIANAPOLIS, IV

WILLIAM S. GRAY
School of Education, University of Chicago

THE BROADENING OF EXPERIENCE THROUGH EXTENSIVE SILENT READING (FOURTH, FIFTH, AND SIXTH GRADES)

By the time a pupil enters the fourth grade he should be able to read fluently subject-matter of ordinary difficulty, such as untechnical articles in high-grade newspapers. The extent to which he comprehends what he reads depends primarily on the fund of information which he has at his command. The pupil of limited experience in a given field will comprehend what he reads less thoroughly than one who has had wide experience along relevant lines. Inasmuch as the average pupil secures most of his experiences concerning the world at large through reading, rapid progress in the development of ability to comprehend depends to a very large extent on extensive reading. This conception of the reading problem in the intermediate grades is fundamentally different from the traditional point of view. As a rule no new problems have been introduced, but the reading problem of the lower grades has been enlarged and intensified in the higher grades. The subject-matter has been more difficult, articulation and expression requirements have been more exacting, and discussions have been more detailed and analytical.

The problem of reading in the intermediate grades, as it is here presented, relates primarily to the acquisition of experiences through silent reading. The justification for this change in emphasis from oral reading to silent reading may be briefly

stated as follows: A first-grade pupil is able to pronounce words more rapidly than he is able to recognize them, but during the second and third grades his rate of recognition equals or surpasses his rate of pronunciation. By the time the pupil reaches the fourth grade he has mastered the art of reading well enough to use it independently. The result is that he begins to read more rapidly than during the earlier grades. He becomes interested in the content of what he reads, and, because his vocal chords react somewhat slowly, his eyes run along the lines more rapidly than he can pronounce the words. It is evident that under these conditions speed in recognition becomes an enemy of excellence in oral reading. These facts justify the contention that less emphasis should be given to oral reading during the intermediate grades and greater opportunity should be given for the development of effective habits of silent reading. Further justification for this change of emphasis is found in the fact that a fourth-grade pupil of average ability has usually mastered the mechanics of reading so well that he is able to pronounce at sight words which he is unable to understand. Whenever a pupil has reached this stage in his development, additional mastery of word pronunciation is less important than increased mastery of meanings. These meanings are best secured by the pupil's coming in contact with words and sentences time after time until a body of meaning is built up in regard to them. A large quantity of reading with emphasis on the thought-side such as was recommended for the second and third grades aids greatly in the development of meanings. The change of emphasis from oral reading to silent reading in the intermediate grades gives added opportunity for concentrating attention on the content of what is read.

Again, the curves of progress for rate of silent reading as shown in Diagram VIII[1] reveal the fact that progress in rate

[1] The diagrams referred to in this article appeared in the February number of the *Elementary School Journal.*

of reading is very rapid in the second and third grades, is less rapid in the intermediate grades, and approaches a maximum in the sixth and seventh grades. Numerous investigations of progress in reading show that by the time pupils reach the sixth grade their habits of careful silent reading have been more or less permanently established. It is evident, therefore, that the intermediate grades represent a period during which the rate of reading may be emphasized to advantage. If rate is not emphasized until later, it is probable that improvement in rate, if secured at all, will be attained only through the expenditure of much more time and effort than is required during the intermediate grades.

The foregoing discussion emphasizes the fact that progress in the acquisition of reading ability is dependent on the extension of the pupil's field of experience through extensive silent reading. This is necessary in order to gain a broader background for more comprehensive and critical interpretations. Every content subject in the curriculum should contribute generously to this phase of the pupil's development. Co-ordinate with this large emphasis on meanings and experiences are several phases of the technique of reading which should not be neglected. The effective reader is the one who can read rapidly as well as intelligently. Training in the recognition of increasingly large units is a prerequisite of rapid silent reading and should not be neglected. Furthermore, the extensive silent reading which the pupil now undertakes brings him into contact with words whose meanings and pronunciations are unfamiliar. Thoroughgoing instruction should develop ability on the part of pupils to determine the meanings of such words through the use of appropriate helps.

The preceding paragraphs have set forth some of the general considerations relating to reading instruction in the intermediate grades. If Indianapolis adopts the program as outlined above, it follows that the most urgent problems in reading

must be defined in the light of the present achievement of the pupils. The reading tests which were given revealed the following facts in regard to the results of reading instruction in the fourth, fifth, and sixth grades: (1) The results in oral reading were somewhat lower than in the case of several cities with which Indianapolis was compared. (2) The rate of oral reading was below the average in the fourth grade, but approximated the average from that point on. (3) Accuracy in oral reading was distinctly low throughout the intermediate grades both in simple and in difficult passages. (4) The rate of silent reading was somewhat below the average in the fourth grade, but rose to a high level in the fifth and sixth grades. (5) The comprehension scores were noticeably low throughout the intermediate grades.

Owing to the slow progress which has been made in the lower grades of some schools it will be necessary to give considerable time to oral reading in the fourth grade. Wherever continued emphasis on oral reading is necessary, quantitative sight reading of simple selections is recommended. Fourth-grade teachers who find themselves confronted with this problem should read the preceding section of the report for detailed suggestions concerning methods of mastering the mechanics of reading. When pupils reach the point, however, at which they are able to read fluently and to group words effectively, the teacher has objective evidence that emphasis may appropriately be changed from oral reading to silent reading. After the present year continued emphasis on oral reading in the fourth grade should be unnecessary.

The low comprehension scores which were made by pupils of Indianapolis suggest the need of effective training in habits of thoughtful silent reading. There are four prerequisites to rapid progress along this line: namely, an abundance of interesting material for reading, concentration of attention on the content of what is read, improvement in rate of reading or

enlargement of the units of recognition, and development of ability to determine the meanings and pronunciations of new words through the use of appropriate helps. Each of these prerequisites will be discussed in turn.

An abundance of interesting reading material is necessary both for the wide extension of reading experience and for the development of ability to attach meanings to words. The principles underlying the selection of appropriate subject-matter for reading are discussed in detail in a later section and will not be commented on here. The fact of immediate importance in this discussion is that interesting and appropriate selections must be provided in abundance for each class in reading. Instead of devoting days to the re-reading of one selection, the pupils should read pages and in many cases entire chapters during the course of each reading exercise. The content subjects as well as the reading exercise should contribute generously to the rapid enlargement of the pupil's fund of information. Instead of devoting an entire recitation period to the discussion of two or three pages concerning the discovery of America, teachers can secure far better results if the pupils are permitted to read chapters or even entire books which give interesting accounts of this historic event. Furthermore, reading outside of class hours should be encouraged in every way possible. In many schools throughout the country pupils are required to read at least one book a week in addition to the readings which are assigned in class. This requirement presupposes an abundance of reading material for use by the pupils. The fact that ample provision of appropriate books has not been made will be discussed later. If Indianapolis is to realize the most desirable results from instruction in the intermediate grades, reading material must be supplied in greater abundance for use both in the classroom and for outside reading.

Attention is concentrated on the content of what is read during silent-reading exercises in various ways. One of the

typical exercises observed in Indianapolis was conducted as follows: The teacher directed the pupils to read the first paragraph silently. The time allowed for reading the paragraph was limited. After the paragraph had been read, the pupils were asked to reproduce what was remembered or to answer questions based on the passage. In many cases these discussions were detailed and analytical. This method is evidently based on the assumption that silent-reading ability is dependent primarily on some sort of technique that can be developed by exercising the memory or by training pupils in the art of breaking up a passage into small units of thought. While pupils undoubtedly need training along these lines, nevertheless a wide use of exercises of this type limits the opportunity for extensive reading and for the enlargement of experience, both of which are of the greatest importance in training pupils to understand what they read.

The exercise which follows was observed in one of the schools of St. Louis. It is discussed at this point because it illustrates a type of silent-reading lesson which secures a large quantity of information and which trains in effective methods of silent study.

The teacher was conducting a series of information lessons concerning Holland. She had secured a large number of books which contained relevant chapters. The pupils were given two reading periods in which to read as much as they could silently and to make notes in regard to the interesting points which they discovered. At the end of this period the teacher and the class made a list of the most important problems relating to Holland. Each pupil chose a problem from the list and made it the basis for further study. He read carefully but rapidly all of the references which he could find relating to his problem. Pictures were secured, illustrative materials of various types were collected, and the facts which were secured through reading were organized in good form. After two days of intensive study of this type each pupil reported to his classmates the results of his reading and study. Whenever necessary, references were read to the class to illustrate an important point or to give support to a judgment expressed by the pupil in regard to some phase of life in Holland.

It is evident that exercises of this type provide for the enlargement of experience, give ample opportunity for extensive reading, concentrate attention effectively on the content of what is read, and train in the careful selection and organization of subject-matter. Frequent exercises of a similar character are recommended for Indianapolis in place of unproductive oral-reading exercises and in place of some of the detailed silent-reading exercises which were observed.

It should not be understood that all silent-reading exercises are to be conducted according to the plan outlined in the preceding paragraph. Effective readers read at different rates and for different purposes. For illustration, one may read the morning newspaper to determine what the important events are which have occurred recently. Interesting reading habits have been developed by most good readers in such cases. The eyes take in the large headlines almost instantly, and certain columns are selected for reading. The eyes run down a column rapidly, catching items of information here and there. After a very short period, attention shifts to another column, and the skimming process continues. In two or three minutes an effective reader has secured a very large number of important news items. Again, one reads a popular novel rapidly for pleasure, dwelling upon those parts which appeal to one's interest. On the other hand, an article in the *Atlantic Monthly* dealing with some modern social problem requires more deliberate reading. One may read slowly in such cases, pausing at each sentence or line. Often each statement is carefully weighed and a judgment reached in regard to its validity. The significant point which arises out of the foregoing discussion is that there are several silent-reading attitudes, each with its set of appropriate habits. No single device for teaching silent reading will lead to the establishment of all the types of reading habits with which a reader should be equipped. Each teacher should select materials from time to time which will give opportunity

for development along various lines. The pupils should be trained to recognize at once the type of selection which is to be read and to associate with it the appropriate reading attitude and habits.

As was pointed out earlier in the discussion, progress in silent-reading ability involves an enlargement of the units of recognition. Scientific studies have shown that the reader of average ability uses only a part of the possibilities of recognition which are supplied by his field of clear vision. An enlargement of the units of recognition demands broad experiences which make possible the comprehension of meaningful phrases in a single fixation of the eyes, freedom from the difficulties which new and unfamiliar words present, and freedom from the limitations of vocalization. It is evident, therefore, that pupils of the intermediate grades must be given frequent opportunity to read silently material which is relatively easy for them if rhythmical movements of the eyes are to be developed in which a relatively wide unit of the line will be perceived and comprehended at each fixation.

Indianapolis secures improvement in rate of silent reading by conducting numerous exercises in which the pupil is given a limited amount of time to complete a passage. This type of exercise accomplishes desirable results, as evidenced by the relatively high score made by Indianapolis in rate. The value of this method lies in the fact that it causes the pupil to utilize all of the resources at his command in order to meet the requirements which are imposed on him. Inasmuch as rate is retarded when comprehension difficulties are encountered, it is evident that units of recognition will be enlarged more quickly if simple selections are used. In addition to the exercises described above, simple selections of considerable length should be assigned for rapid silent reading in order to provide ample opportunity for the permanent establishment of effective eye movements.

The results of the reading tests showed that the pupils of Indianapolis are very inaccurate in reading simple passages as well as more difficult ones. Thoroughgoing training in the phonetic analysis of words together with quantitative oral-reading exercises in the second and third grades will do much toward eliminating inaccuracies in the reading of simple selections. The development of ability on the part of pupils in the fourth, fifth, and sixth grades to pronounce long words quickly and accurately requires more attention than is given to this problem in the average classroom at the present time. The analysis of words which was begun in the first grade and continued through the second and third grades should be extended in the intermediate grades to include the laws of syllabication and accent, and a study of prefixes, suffixes, and roots. In this connection the meanings of words as well as their pronunciations should be made the basis of intensive study. Special periods should be devoted to these problems for the purpose of developing a considerable degree of ability in the recognition of meanings and pronunciations. Meanings should be derived primarily through word analysis and through the context of what is read. Furthermore, pupils should be trained to use dictionaries and books of reference whenever such helps can be used to advantage.

The facts presented in the preceding paragraphs should emphasize the importance of both speed and quality of silent reading. During the intermediate grades selection after selection should be assigned and pupils trained to read silently under the guidance of specific purposes. Such recitations cannot be conducted without careful thought and preparation. The specific methods used must be adapted to the selection at hand, or selections should be chosen which are adapted to given purposes. Many selections can be read quickly for the story. Several pages of *Black Beauty* may be read quickly to find out the number of things that Black Beauty had to become

accustomed to in order to be a well-trained horse. Speed can be encouraged by limiting the amount of time given to the reading. On the other hand, many selections should be read with more care in order to determine what are the essential points in the selections, or to weigh the relative importance of the facts, or to associate the facts with what one already knows.

Although the broadening of experience in the intermediate grades comes primarily through extensive silent reading, nevertheless it is recognized that occasional oral-reading exercises may be introduced to advantage provided they are properly conducted. It is a frequent practice in many classrooms throughout the country to organize oral-reading exercises around selections which the pupils have read three or four times during the study period and which have been discussed at length by the class as a whole. It is needless to say that such exercises usually result in little progress, for there is no real motive for reading and very few incentives to cause pupils to put forth effort. Formal exercises of this type were observed in Indianapolis. On the other hand, many teachers were observed who organized oral-reading exercises in which there were real audience situations and in which effective incentives were employed. Although teachers of the latter type usually devote far less time to oral reading than do teachers who follow traditional methods, nevertheless the results which they secure are distinctly superior. It is reasonable to assume that the pupil who puts forth his best efforts in the thorough preparation of one selection which he will read with a real purpose will make more progress than the pupil who reads several selections in fulfilling a formal classroom requirement.

At a conference which was held with several training teachers of Indianapolis a list of the most effective oral-reading devices which are used in the city was submitted by the

teachers. They are presented here with the recommendation that they be substituted for the formal unproductive types of oral-reading lessons which are characteristic of many class-rooms.

1. Each row of a class may be provided with a separate story. The readers then feel under obligation to read effectively for the benefit of their audience.

2. Rows are given charge of morning exercises. The better pupils are asked to read, and the poorer readers recite poems or are assigned very short reading exercises. As the poorer readers gain confidence they are given longer assignments.

3. Effective results are secured by having various members of a class read passages in support of a judgment which they are defending.

4. In subject-matter studies, such as history and geography, the pupils frequently read clippings from magazines and selections from books which are not accessible to all of the class, but which throw light on the problems under consideration.

5. If the pupils vary widely in ability, short selections may be assigned which are adapted to the varying abilities of the pupils. The selections may then be read during a special class exercise.

6. Good results are sometimes secured by requiring a certain degree of excellence in oral reading before the pupils are permitted to participate in a group exercise, such as a dramatic presentation.

7. A given topic, such as patriotism, may be chosen as the center of discussion and study. Newspaper clippings, poems, and prose selections may be chosen which contribute to the theme in question, and they may be read in a class exercise by individual members of the group.

8. Civic clubs may be organized to meet once a week for a period of thirty minutes. Members may be required to choose selections which are appropriate for the program of the day and to read them before the group. Each pupil has a real purpose for reading, and the audience situation which confronts him calls forth his best effort.

9. Outside-reading days may be arranged once a week in which pupils read short portions of interesting stories which they have been reading at home. Surprise-stories days may be similarly conducted.

10. Magazine clubs are organized in some schools and the members of the club are given opportunity once a month to read articles from magazines which seem interesting or worth while to them.

11. Some pupils prepare scrapbooks in geography known as books of travel. They secure permission to read selections from these books at appropriate times in the development of a geographical topic.

There is special need of introducing frequent tests and measurements of reading ability in the intermediate grades. It has already been pointed out that these grades are confronted with a number of specific problems, such as the rapid extension of experience through reading, improvement in ability to comprehend what is read, enlargement of the span of recognition, and improvement in oral-reading ability. Steps have already been taken in many classrooms to secure progress along one or more of the lines mentioned above. Intelligent direction of instruction requires that the teacher make frequent critical studies of the results which are secured in order to determine the lines along which progress has been made and the lines which require added attention.

Furthermore, teachers consciously or unconsciously emphasize certain phases of instruction more than others. This fact is illustrated clearly in the silent-reading results for Indianapolis, in which rate ranks high and quality ranks low. Differences in emphasis along another line are evidenced in Diagram VII, which shows different degrees of accuracy in oral reading attained by various schools. Inasmuch as wide variations in progress are possible, it is essential that a teacher determine from time to time the character of the progress which her pupils are making in order that she may know where emphasis is most needed.

Again, pupils in the intermediate grades vary widely in reading ability. Some pupils are very capable readers, while other pupils need a great deal of individual instruction. Furthermore, some pupils are weak along some lines and strong along others. Frequent tests are necessary in order to help the teacher discover the individual needs of pupils. It is true that every classroom teacher devotes a large portion of her

time trying to determine the kind of help which various pupils need. Tests are designed to help the teacher secure the information which she needs more quickly and more accurately than she otherwise would be able to secure it.

The discussion of reading in the fourth, fifth, and sixth grades may be summarized as follows:

1. The fundamental purpose of reading in these grades is to broaden the experience of pupils through extensive silent reading. In addition there are problems in the technique of reading which should not be neglected.

2. The change in emphasis from oral reading to silent reading is justified by a number of psychological changes which occur before or during the intermediate grades.

3. Owing to the slow progress which has been made in oral-reading achievement in several schools, it may be necessary during the present year to give considerable attention to oral reading in the fourth grade. After this year major attention to oral-reading instruction should be limited to the first three grades.

4. The prerequisites to rapid progress in the development of effective habits in silent reading are an abundance of interesting material for reading, concentration of attention on the content of what is read, improvement in the rate of reading, and development of ability to determine the meaning and pronunciation of words through the use of appropriate helps.

5. There is need of providing interesting and appropriate reading material in greater abundance both for class purposes and for outside reading.

6. A larger variety of effective methods should be employed to concentrate attention on the content of what is read. Such exercises should provide for the enlargement of experience, give ample opportunity for extensive reading, and develop the various types of reading attitudes and habits which are characteristic of effective readers.

7. Frequent rapid silent-reading exercises are necessary to enlarge units of recognition. Easy selections should be used for this purpose.

8. Whenever oral-reading exercises are conducted, they should be organized about real audience situations and they should provide sufficient motive to secure effective effort. The numerous formal oral-reading exercises of the intermediate grades should be discontinued in favor of a few well-motivated productive exercises.

9. Tests of various phases of reading ability should be given frequently in order to reveal to teachers the direction of growth, the amount of attention required for the various phases of reading instruction, and the individual needs of pupils to the end that instruction may be more intelligently and effectively directed.

THE INDEPENDENT APPLICATION OF READING ABILITY TO ALL PHASES OF SCHOOL WORK (SEVENTH AND EIGHTH GRADES)

The problem of reading in the seventh and eighth grades is very little different in kind from the problem of the intermediate grades. The pupils of the upper grades, however, should be able to read more easily and intelligently than the pupils of the lower grades. By the time a pupil reaches the seventh grade he should have acquired a broad reading experience, he should be able to read orally or silently any material of moderate difficulty, he should have developed effective habits of rapid silent reading, he should be able to recognize quickly the importance of the material which he is reading and to make use of appropriate sets of reading habits, and he should be somewhat skilful in the use of effective helps whenever difficulties relating to meaning and pronunciation are encountered. Progress in reading in the seventh and eighth grades is secured primarily through the independent application of reading ability to all phases of school work. The

problems which arise will be discussed briefly under three headings: (*a*) the kind of reading opportunities which should be provided, (*b*) the development of effective habits of study, and (*c*) the development of ability to make comprehensive and critical interpretations.

Pupils of the seventh and eighth grades are rapidly developing interest in social and vocational problems. The extent to which they are intelligent about these problems and the extent to which they develop an interest in their further study depend largely on the opportunity which the school provides for experience in these fields. In the past, reading in the seventh and eighth grades has been limited to a few choice pieces of literature. Pupils of these grades should read extensively in the field of literature, from which they should receive interesting information as well as pleasure. In addition to selections of this type, pupils should read widely in each of the content subjects which are studied. They should be introduced to the valuable contributions which reading along various lines makes to the field of their vocational interests, and they should develop a permanent interest in reading and discussing current events. Too much emphasis cannot be given to the need of providing abundant opportunity for pupils to read current literature and selections bearing on modern social and civic problems and on topics of vocational interest.

Training in the use of books and in effective methods of study should receive a large amount of attention in the seventh and eighth grades. Among the problems which should be considered in this connection are the following: (1) realization by the pupil of a definite goal toward which to work or a definite problem which he is to solve during the course of his reading; (2) training in the consideration of and the selection of sources of help; (3) training in the use of tables of contents, indexes, etc.; (4) practice in the orderly setting down of those

points which are relevant to the problem at hand and in the organization of these materials for effective use in the future; (5) practice in the interpretation of the facts secured through reading and in the making of inferences from them; (6) practice in checking one's own thinking by comparison with the thinking of others; (7) introduction of new sources of help and new types of material from time to time in order to extend the possibility of independent study. These problems and many others similar to them should receive persistent attention during the intermediate and grammar grades to the end that pupils may leave the eighth grade thoroughly prepared to carry on many types of reading independently, intelligently, and effectively.

Pupils of the seventh and eighth grades should be trained to make keen and critical interpretations of the materials which are read. If the recommendations which are offered in previous sections of this discussion are followed, pupils should enter the upper grades with a very wide reading experience. This experience is one of the first prerequisites to the development of ability to make critical interpretations. In addition it will be necessary for pupils to develop the habit of using appropriate helps, such as encyclopedias and books of reference, whenever they can be used to advantage. In this connection attention should be called to an error which is made in the intensive study of selections. Too frequently the teacher requires the pupils to look up every possible reference and to study the meaning of each sentence in detail. Better results would be secured if the pupils were required to make fewer interpretations. These should be made concerning major issues in a selection, and they should be made only after the pupils have been given sufficient information concerning the points at issue to enable them to make accurate and intelligent interpretations.

SUPERVISION OF READING

The supervision of reading in Indianapolis has been largely of a personal character in the past. Principals and supervisors have visited classrooms frequently and have offered such suggestions as their judgments dictated. Group meetings have been conducted in which the problems of the various grades have been discussed in detail. Suggestions growing out of effective classroom practices have been systematically collected and distributed to the teachers. The results secured through such agencies by the supervisors are commendable and justify the expenditure of much time and effort along these lines in improving instruction. The results of this investigation show clearly that Indianapolis has teachers of reading who are doing work of superior quality. The methods employed by these teachers should be made the subject of careful observation and study throughout the city. Teachers' meetings should be organized and demonstration lessons should be arranged in order to facilitate the study and discussion of effective methods of teaching reading.

Furthermore, a well-organized campaign should be conducted by the supervisors to promote study and investigation along each of several important lines. It has already been pointed out that there is wide variation in the point of view which teachers hold in regard to the most important outcomes of reading instruction in each grade. A number of general conferences should be held with the teachers in order that this problem may be given careful consideration. In this connection it should be said that each teacher not only ought to know the specific aims of teaching reading in her own grade, but in addition she should realize fully just what the general outcomes of reading instruction are in the elementary school. Without a clear knowledge of what has preceded and of the problems which demand further emphasis it is impossible for a teacher of a given grade to adapt instruction effectively to

the needs of her pupils. Several other problems should be made the subject of similar study and group discussion; namely, the quantity and character of the reading material for each grade, methods of meeting the needs of individual pupils, the emphasis which should be given to oral and silent reading respectively, the most effective methods for securing progress in silent-reading instruction, methods of measuring progress in reading achievement, standards of accomplishment, etc. Rigid uniformity is not a desirable outcome of discussions of this type. They should be conducted in such a way, however, that each teacher will receive a large amount of help from the combined experience of his professional associates.

The results of instruction should be frequently measured. This point has been emphasized in preceding sections of the report. The principals of Indianapolis devote a great deal of time each year to giving individual tests of reading. The usual method which is employed consists of an oral-reading test in which the principal expresses judgment concerning the quality of the pupil's reading on the basis of certain subjective standards which he has in mind. It is evident that such a method of testing is open to numerous limitations among which are the following: (1) oral expression usually receives first consideration; (2) numerous phases of reading ability receive little or no consideration; (3) standards of judgment vary widely in different schools; and (4) the requirements in a given school vary from time to time inasmuch as subjective standards fluctuate widely. In place of the yearly test which is now given in the schools of Indianapolis, frequent tests are recommended which will secure for the supervisors and teachers information which is more objective and precise. The tests should be so organized that all of the important phases of reading ability will be examined from time to time in order that a clearer insight and a truer perspective of the reading problem may be secured.

Furthermore, it is necessary that objective standards of accomplishment be established for the city as a whole in order that teachers may know more definitely what is expected of them and in order that promotions may be made on a more uniform and objective basis. Certain tentative standards in oral reading and in silent reading were recommended in previous sections of this report. It is possible that these standards are too high or too low for Indianapolis under the conditions which prevail in the schools at the present time. Frequent tests given during the year and at the end will aid in the determination of appropriate levels of accomplishment which should be attained by the different grades. Teachers as well as supervisors should participate in this work, inasmuch as tests reveal most to those who give them. Each teacher should become familiar with methods of giving tests. She should utilize them frequently in examining her work to find sources of strength and weakness. Through the co-operation of teachers and supervisors progressive revisions in standards and in methods of procedure can be made. This type of co-operation is necessary in order that the most productive expenditure of time and effort in reading instruction may be secured. It is only when all of the units of a school system work consistently toward clearly defined ends that the most effective results can be attained.

Indianapolis has an unparalleled opportunity to introduce frequent objective studies of reading as a permanent part of the work of the school officers and teachers. Thirty normal-school students have been trained to do such work effectively. It is recommended that these young women give tests frequently during the year in order to secure valuable information concerning the work in each school and in order to familiarize the teachers with the technique of giving tests. The scope of this work should be limited at first. Oral-reading tests can be given to advantage in the first three grades, and silent-reading

tests can be given in all grades above the first. Teachers should give simple group tests at first. Later more exact tests should be introduced with the help of those who have been trained to give them. These tests should supply a body of detailed information concerning the reading habits, the progress, and the achievement of pupils which usually passes unnoticed in the ordinary classroom but which can be used to advantage in a progressive reorganization of methods of teaching reading.

In closing, one final recommendation is offered. Teachers throughout the country are realizing more clearly than in the past the importance of effective instruction in silent reading. Inasmuch as this phase of reading has received a relatively small amount of attention in the past, very few suggestions are available concerning the most effective methods of securing results. The type of information which is needed throughout the country can be obtained best through the co-operative effort of a large number of teachers. Indianapolis has an opportunity to make a most valuable contribution this year concerning effective methods of teaching silent reading. To this end it is recommended that the teachers of the intermediate grades, aided by the supervisors, undertake a thoroughgoing study of the problem. Group conferences will be necessary at the outset in order to discuss the various methods of instruction which are now in use. Descriptions of the most promising methods should be prepared and distributed to the teachers. Frequent tests of the results should be made. As rapidly as effective methods are determined they should be substituted for many of the formal exercises now widely used in Indianapolis.

STATE-PRINTED TEXTBOOKS IN CALIFORNIA

LEWIS B. AVERY
Assistant Superintendent of Schools, Oakland, California

California publishes its own textbooks for the elementary schools of the state and distributes them free of cost to the pupils. By law already enacted, high-school textbooks are to be furnished free of cost to pupils after July 1, 1920. This law does not, however, include state publication of high-school textbooks. During the period from 1884 to 1903 elementary textbooks were written by the teachers of the state, employed for this purpose by the State Board of Education, and these books were printed at the state printing-office. They were not, however, distributed free, but sold at cost—so called. Between this earliest period of state publication of textbooks written by local authors and the present period of state publication of textbooks selected from the field and manufactured by the state under contract with the publishing firms, intervened the period from 1903 to 1913 during which the state printing-office published books selected by the State Board of Education from the field, leasing plates on a royalty basis. These books, however, were not furnished free to pupils, but sold at cost.

We thus have had three distinct plans in vogue for the publication and distribution of elementary state books, covering the period from 1884 to the present time, and now have a law contemplating free textbooks for high schools after July 1, 1920.

It would appear that the experience of California should be able to furnish complete and irrefutable evidence as to the best methods of elementary schoolbook publication and distribution. I regret to say that in important respects opinion is

still divided, and even figures do not tell the truth when placed on the witness stand.

In the light of this extended experience and discussion, the educational forces of the state are, however, fairly united on several fundamental propositions.

1. They are favorable to the free distribution of textbooks to the elementary schools as educationally and economically advisable.

2. They favor the gradual extension of free textbooks to the high schools.

3. They are opposed to uniformity of textbooks throughout the state, believing that the aims and purposes of individual school systems and individual communities make advisable some differences in textbooks and that this required differentiation is very much more in effect in high schools than in grammar schools.

4. It is their belief that if books are purchased in the market rather than printed by the state, uniformity is not necessary to an economical administration of the textbook distribution.

5. The printing of the elementary textbooks for the state of California by the state, which has now been in vogue for many years, has not, in the minds of the school people of the state, produced as good a grade of book as that furnished by the publishers.

6. While the figures given out by the state reports would indicate some saving over publishers' figures, the reports have failed to take full note of publishers' discounts or of royalties required to be paid when the state does the printing, or of the large expense necessary to equip the plant for such printing.

7. The extension of state printing to high-school textbooks is an absurd and impossible proposition. These matters have been so thoroughly discussed in the report of the joint legislative committee in 1917, pursuant to a resolution adopted in 1915, that I would refer anyone desirous of looking into the

matter from both sides, and in a complete way, to the pamphlet issued under that heading by the California state printing-office at Sacramento and doubtless obtainable from the superintendent of public instruction.

I will at this time briefly discuss the propositions stated above. The State Association in California in 1902 recommended free textbooks, and the Southern California Association a little later made similar recommendations. It has been their belief that the financial advantage of purchasing discounts without the middleman's profit should be taken advantage of by the schools for the education of the children; further, that compulsory attendance logically carries with it a requisite equipment for education; that, in guaranteeing to children the right of free education, necessary textbooks and supplies are included; that free textbooks are a proper corollary of democracy in education; that, while there are administrative difficulties connected with them, there are also important administrative advantages, among which is the possibility of having books on hand when school opens without loss of time; that hygienic objections attach to public libraries of any kind, and that care reduces this danger to a minimum; that, on the whole, books are better preserved when owned by the district than when owned by the pupil.

The arguments for free textbooks in the elementary schools apply for the most part to high schools as well. As our national program carries the age of compulsory attendance higher, free textbooks for high schools become more imperative. The large expenditure required to extend free textbooks to high schools, on account of the number and expensive character of the books, may be used as an argument against free textbooks for high schools, but is a more valid argument for free textbooks, since the individual who cannot afford them is thus discriminated against if compelled to purchase them.

As has been remarked in the state report referred to, "we do not want the marvelous advantages of unity muddled in

anybody's mind with the deadening effects of slavery to uniformity." Disciples of uniformity apparently consider the teacher as the administrator of the textbook; progressive education would have the textbook the pliable tool of the teacher.

Perhaps the argument most generally made for uniform textbooks throughout the state is that pupils are likely to move from one district to another and that a hardship is worked upon them by having to change textbooks. The proponents of this argument forget that with free textbooks the argument ceases to be valid, since the pupil leaves his books in one district and picks up other books in the new district. It is quite probable that in the administration of the purchase of textbooks oversight and care and some sense of authority will always be required in order to preserve schools and classes against the wandering fancy of the fledgling teacher on the one hand, and the hard-and-fast ideas of the old pedagogue on the other. Such limitations as are necessary can be placed in the hands of a state board of education in sympathy with educational ideals, or city boards of education, with the leadership of a city superintendent who has educational purposes. This would accomplish far better results than to tie the state up for a series of years to something it has happened to get cheap, and with state uniformity this last experience is not uncommon. It is the universal testimony of the school people of California that, while the state-published textbooks have greatly improved of recent years in the matter of material and binding, they are distinctly below the quality of the book put out by the publishers, the plates of which were originally leased. While this is not apparently a necessary adjunct of state printing, it has thus far been uniformly true in California. A state printing-office is not, perhaps, particularly interested in constructing books so that they will last, since the more rapidly they disappear the more work it makes for the state printing-office, a result seemingly not wholly undesirable from its point of view.

Whether an unprejudiced investigation would show a saving in California by the present mode of printing the elementary textbooks for the state rather than purchasing them in the open market is a matter of dispute. The printing-office has certainly been operated for the last few years with unusual efficiency and with great saving over the long previous record of this office. But when the quality of work is considered and the investment in the plant and the royalties that must still be paid to authors, if books of real value are obtained, it is doubtful if any real saving has been effected when compared with what would be spent if books were purchased in the open market.

The proposition to print high-school textbooks presents absurdities at once. The average number of pupils using high-school textbooks in the state of California approximates less than four thousand. It is probable that for a four-year period of adoption eight thousand textbooks would be the average number required in the hundred different branches pursued in the high schools of the state. Under the present law no edition of less than twenty-five thousand copies of an elementary textbook can be printed, it being considered impossible to publish a smaller edition economically. Such an edition of high-school textbooks would, on the above average, last for more than twelve years. In most subjects the material, method, and make-up of the book would be out of date in half that time. An edition of twenty-five thousand in third-year Latin texts would thus be estimated to last California twenty-six years, fourth-year Latin textbooks, thirty-two years, and household chemistry texts, fifty-three years. Evidently, only a picked few of the books most used in high schools could possibly be printed by the state, and the policy of enlarging the printing plant of the state when the books are already on the market at as reasonable a figure, better printed and better

bound than those the state office can produce, is a dubious policy.

There has always been linked with the proposals of state-printed textbooks in California the promotion of the idea of state authorship. During the first period of state-printed textbooks, from 1884 to 1903, state authorship was given a fair trial, and failure was the result. To anyone acquainted with the long and tedious road to successful authorship in textbooks the confidence displayed by some legislators in the idea that any successful teacher can be employed to write a textbook that shall be successful is little short of sublime. It is hardly probable that today any state of educational standing will consent to legislation so markedly insular in character. Successful textbooks cannot be written to order.

While state-printed books have to be paid for by the public, the taxes are so indirect that it must be acknowledged as being less visibly a burden upon the people than is the case where books are purchased directly by the district. It is probable that on this account schools discard books more readily and replace soiled with new ones more frequently than if they were paid for out of the district funds.

The publication of school textbooks by the state has all the complexities attached to other attempts at socialistic production and, added thereto, the constant temptation to disregard educational ends in the attempt to make a financial success of the venture. The joint legislative committee which reported in 1917 on the printing of high-school textbooks found the proposition impracticable, considering the complexities of the subject. It is not remarkable that there should be a great divergence of opinion among the people generally and legislators in particular with regard to what is wise.

I have given you briefly what I believe to be the fairly general opinion of school people in California who have had to do with the different stages of the experiment for a considerable period of time.

Educational Writings

I. WHAT IS "CREDIT-FOR-QUALITY"? A SUMMARY AND EVALUATION OF PUBLISHED DISCUSSIONS

H. O. RUGG
University of Chicago

Many colleges and high schools are now giving "credit-for-quality" in marking student work. This article aims briefly to define and evaluate the device for public-school administrators—to point out its basic features, summarize the arguments for and against it, and present results obtained in using it.[1] The discussion is based upon the reading of the articles (twelve in number) which have been found in scanning the back files of ten educational journals, and the important monographic series and books which relate in any way to the field.[2]

What is credit-for-quality?—It is primarily a device for marking student work and for controlling the number and kind of courses which students take; hence of controlling the time in which they may "graduate." Any school which permits its brighter students to carry, at one time, more than the normal "four courses" is operating one of the features of credit-for-quality. Any school which not only requires its students to pass a given number of courses in order to graduate, but also requires that a given proportion of the courses be passed at a higher grade, say A or B, exhibits in its administrative machinery another of the phases of credit-for-quality. Schools that do these things and use only the conventional letter or numerical marking system (A, B, C, D, etc., or Ex, S, M, I, P, or 100, 90, 80, 70, etc.) have not, however, been regarded as really giving credit-for-quality, because they do not also give "grade-" or "credit-points." In the credit

[1] The general problem of the standardization of methods of marking was treated in a similar summary article in the issue of this journal for May, 1918, under the title "Teachers' Marks and the Reconstruction of the Marking System."

[2] The writer will appreciate having his attention called to any publications on the problem which are not included in the bibliography at the end of the article

schemes suggested during the past ten years, the feature that is new is the mechanical one of assigning to each letter-grade A, B, C, etc., a stated number of "points." Thus, in order to be graduated, the student must not only pass so many courses; he must also secure so many grade- or credit-points. That is, he must not only get a given number of D's, let us say, but he must also get a given number of B's, or C's, or whatever is the new "dead-line" that is put upon the marking scale. Most schools still have *one* dead-line, the "pass mark"; some, for a generation, have had *two* or *three*—such as "exemption" marks, marks which must be maintained in order to take more courses, or in order to take part in the special activities of the school—athletics, journalism, debating, etc.

Credit-for-quality aims to recognize differences in ability.—At bottom, therefore, credit-for-quality is a device of the school administrator to fit the work of the school to the striking variation in ability in students. It is clear that this can be done in two ways: first, by differentiating subject-matter for groups of students of varying ability; second, by letting the better students take more courses or subjects at a time.

1. *The first method.*—This groups students in sections of roughly the same ability and gives each group a course of study adapted to its level. More intensive study of a given field or subject, therefore, is one solution of the very important administrative difficulty which we face in teaching, in masses, children who vary widely in ability. It is encouraging to note that many schools are now experimenting carefully along this line. It is to be hoped that principals of such schools will keep records of results and of their administrative procedure, and that they will describe their experiments in educational journals. It gives promise of being the most helpful single administrative step which we can take to solve the problem of mass-instruction—certainly far more easily administered in a public school than any form of individual instruction; e.g., supervised study.

2. *The credit-for-quality method.*—A still more *easily administered* method of fitting school work to varying ability, however, is to accept our present program of studies (so many courses of mathematics, so many hours of English, of history, of language, of science, etc.) as thoroughly right; correspondingly, to accept the content of each separate course, and to let students carry more courses at a time. This is what credit-for-quality protagonists do. This assumes the correctness of the distribution of the present subjects in the program of studies, both as to number and kinds of subjects and as to content of a specific subject itself. More subjects at a time, more

fields of study carried at once—thus the "15" laps are finished in less than the ordained four years.

This is the crux of credit-for-quality. This is its first outstanding characteristic, namely, *a two-phase marking system.* One phase includes a letter scheme which sets a passing mark and prescribes the number of courses that must be passed for graduation; a second includes generally a "point" scheme, each "grade" or mark carrying automatically a definite number of points, grades above the "average" receiving "extra" credit, those below the average bringing about a deduction or loss of credit. Thus, the *poorer* student is actually forced to take *more* "subjects" or a longer time to graduate by repeating the "subject" until he has made the desired "pass." One characteristic of this two-phase marking system is that it is aimed at focusing attention of students on the necessity for "industry" in order to make a higher mark than "pass" in a given proportion of courses. (Certainly the scheme cannot be thought of as affecting "ability" in any way except as it is contributed to by industry and effort!) Similarly, it is aimed at making the marking system more flexible in the hands of the teacher. Of course, to set *another* dead-line, say at B, corresponding to the one in general use at D, brings about, with many teachers, merely a readjustment of attitude toward the units of the marking scale. However, it can be seen that the designers of the credit-for-quality scheme have in mind that the new machinery will tend to "raise scholarship." This is a commonly stated aim, revealed in the articles on the subject. As suggested above, "raising scholarship" means, in this case, setting a second hurdle (B) after the first one (D), which can be jumped (if "ability" permits) only by greater application. Thus one of the most effective outcomes of credit-for-quality is found in the *pressure* that it exerts on the student for greater industry and concentrated effort.

Illustrative credit-point schemes.—The literature reveals five illustrative credit-point schemes, to which we may refer briefly to provide concrete examples of what is being done. The scheme of grade-points used in the University of North Dakota plan, Kennedy (2), and in that suggested by Secor (3), is as follows:

A.....1.3
B.....1.2
C.....1.0
D.....1.0

These men point out that originally fair work (C or F) carried a credit of 1.1. As a result of the first year's trial in the University of North Dakota, it was found that too many students were receiving extra credit who did not

deserve it. For example, they were getting credit-for-quality for several courses reported good or fair, regardless of the kinds of work which they were doing in their other courses. The student uniformly marked C was also receiving credit-for-quality. Kennedy says: "Experience thus shows that F deserves no extra credit-for-quality. It was also recognized that the student must not be allowed to take more than four studies, unless he made very high records in all studies in previous years." It was pointed out that the student could neglect work in, say, two courses, getting pass, F, or X in the other three, thus accumulating a large score for the term. The methods by which the North Dakota plan was improved, and the restrictions imposed on the number of courses which students were permitted to take, are illustrative of the way in which the scheme has been improved in recent years in other schools.

The credit-point scheme used in the University High School (Chicago) is as follows:

		Units
A	(95)	1.25
A—	(90)	1.20
B	(85)	1.15
B—	(80)	1.10
C	(75)	1.00
C—	(70)	0.95
D	(65)	0.90
D—	(60)	0.85

The fourth plan is that represented by the Richmond, Indiana, High School, in which the credits are as given below:

A	(superior)	1.2 per credit hour
B	(very good)	1.1
C	(average)	1.0
D	(poor)	0.8
F	(failure)	0.0

These four-point schemes are thoroughly representative of the present methods of assigning grade-points. As can be seen, they are based upon the criterion that if there are, say, five grades of work, the third, or middle grade of work, shall be regarded as average or normal, and shall receive one unit of credit; that the next higher grade of work shall receive either 0.1 more credit or 0.2 more credit, and that the very highest grade of work shall receive 0.2 or 0.3 more. Those plans that have been more carefully perfected also imply a penalty by deducting credit for work which drops below

the average. This is illustrated by the Richmond and the University High School plans.

In the tabulated schemes, therefore, a given number of grade-points or credits are assigned for having made a certain mark. Note that the selection of the number of points is entirely arbitrary. It does not recognize the extent of individual differences, of which, in spite of our partial ignorance of the distribution of human traits, we are already fairly certain. For example, we do know that "A" students, who form perhaps the upper 5 to 7 per cent of our entire student group, learn several times more rapidly, acquire skill several times more thoroughly, and develop thought-power which is utterly out of proportion to the additional 0.3 of credit which they get. Thus it should be pointed out that if we finally decide to give credit for the quality of work done, we at least ought to give it in approximate accordance with the distribution of abilities which has been found to exist in the general population. If one should consistently apply a distribution-curve in assigning extra credit for quality—that is, if, instead of using A, B, C, D, one should use numbers which would represent approximately the differences between the pupils in various groups of the marking scale—instead of assigning such values as occur in the scheme, 1.3, 1.2, 1.1, etc., he probably should assign values which vary something like 4.3, 3.4, 2.5, 1.6, 0.7, for those groups of students who are thought of respectively as excellent, superior, medium, inferior, and poor. However, this suggestion is made only to meet the desire of some of the credit-for-quality advocates to differentiate, by a new kind of marking system, the individual abilities of pupils in our classes.

Limitations concerning the number of courses that can be taken.—The first characteristic of the scheme has been shown to be the twofold feature of its marking system. We said credit-for-quality devices controlled the time of graduation by permitting brighter students to take more courses at a time. This points to *the second characteristic of the scheme*: the administration of election of courses must be controlled by faculty action. For a generation colleges and schools have permitted bright students to take courses in addition to required ones, and in excess of the normal number, "on faculty action." Even in many schools which operate a credit-for-quality scheme "faculty action" is necessary to permit a student to take certain additional courses. For example, in the University of Chicago High School students must maintain an average of "80" and get permission "by faculty action" to take five units. At the same time the credit or point scheme operates, *in part* automatically, to permit (without faculty action) any student who gets 75 to take an additional half-course in certain special fields, such as

mechanical drawing. The grade-point scheme given above illustrates the way in which credit is deducted if the student falls below 75.

Essential purposes of credit-for-quality.—The purposes of the scheme are clarified by the enumeration of its two outstanding characteristics. We have already discussed the fundamental one—that of fitting school work to the varying abilities of students. The second purpose, as gleaned from published accounts by protagonists of the movement, is that of giving credit toward graduation for higher quality of work. Advocates, like Secor (3) and Kennedy (2), assert that the conventional marking system differentiates but two grades of ability, failure and pass. They say we do not distinguish the "excellent" from the "average" or from "fair." Hence the inference by some of these workers, that the proper way to differentiate between levels of ability is to introduce another system of marks, the only difference between it and the conventional one being that the one is expressed in one set of units, A, B, C, D, for example, and the other is expressed in a numerical set of units such as 1.0, 1.2, etc.

The third purpose, and one reiterated constantly by advocates of the device, is that giving credit-for-quality provides an incentive to do good work. The literature abounds in arguments pro and con on this question. Advocates of credit-for-quality, such as Kennedy (2), insist that the results of administering the scheme show that it does operate as a powerful incentive for a higher quality of work. Its opponents, however, even in the same institution, such as Ladd (4) in the University of North Dakota, strenuously object to such conclusions, and go on record as saying that the "adoption of the device in secondary schools would be nothing short of a calamity." He says that it provides an artificial incentive to high scholarship, and not a natural one.

This purpose of setting up helpful incentives to better qualities of work has led to a misapprehension on the part of a number of writers in the field—e.g., Ruediger (7)—that giving credit-for-quality, with the accompanying "standard" grades which are set before the student for graduation, will imply that he can finish his school career with fewer subjects taken. The more recent discussions of this question, such as Johnson's (10), indicate (by the restrictions that are placed upon election of courses, the number of courses which a student can take at any one time, and the fact that he must make a high grade in each one of these courses) that this misapprehension has been largely cleared away.

How did credit-for-quality start?—The scheme is a college innovation. It was suggested first in 1902 by President William D. Hyde, of Bowdoin

College. The literature does not show that President Hyde or his college tried out the scheme suggested by him. Three years later we find two instances (at Columbia and University of North Dakota) in which colleges had put into practice the essential ideas of his scheme, namely, that of superimposing upon an A, B, C, D, or Ex, S, M, F, P, system of marking, an extra-credit scheme. During the first decade of the twentieth century there was a distinct movement under way in our colleges and secondary schools, looking toward the shortening of the college curriculum and the improving of marking and credit systems. It was due in part to the activities of men like Presidents Elliot and Harper. Many of these administrative changes had to do with devising dual credit and point schemes which since then have been introduced into many colleges.

Results obtained under the operation of credit-for-quality schemes—proportion finishing in less than normal time.—In the theoretical schemes which have been reported, one of the arguments advanced for the method is that it will permit the rapid pupils to finish the four-year high-school course or college course in less than the normal four years. Reports which are available show that it is exceptional indeed for the scheme to operate in this fashion. When the proper restrictions are placed upon it, only a very small percentage of the pupils in a school will finish in less than four years. For example, in the University High School varying credit was given prior to 1915 for four years. In that time no pupil had by reason of the credit-for-quality scheme been graduated in three years. Several had secured 20 units in four years. A very few had finished in three and one-half years. The same comment is made by other writers.

In this respect there is a distinct difference between the point of view of Pickell (12) and Secor (3) and that of the designers of the University High School scheme. The former two apparently emphasize the fact that students will finish the high-school course in less than four years. The latter emphasize the fact that students will have covered more subjects of study, or have done them more intensively.

Lack of discussion of varying the courses for different grades of ability.—This whole discussion of credit-for-quality emphasizes the fact that its protagonists are overlooking the basic method of fitting school work to the varying abilities of children, namely, that of grouping children in sections of approximately equal ability and of designing minimal, superior, and rapid courses of study for such sections. At the present time the discussion of credit-for-quality has emphasized the possibility of having the pupil take more courses, and not do more intensive work within a subject of study.

SUMMARY

1. Credit-for-quality is a name given to a method of marking students' work and of determining the number of courses which they can take at a given time.

2. It is a form of school machinery which administrators are using to let the brighter pupils work up to their abilities. It does this by permitting them to take more subjects at a given time.

3. It is designed to act as an incentive to better scholarship. It is asserted that it does this by setting two dead-lines on the marking scale—one, the passing mark, the second, the mark which must be made in a given proportion of the courses in order to be graduated. This is believed to contribute, and probably would contribute, to greater *industry* on the part of the "average" and slightly slower students. It cannot really affect their abilities, except through industry.

4. It is so designed, however, that it ignores the slower student, penalizing him for his lack of ability at the same time that it does *not* differentiate subject-matter in a way adapted to his lesser ability. Thus it succeeds in fulfilling its fundamental purpose—varying work to fit ability—for the brighter students only. Furthermore, it is obvious that it does this only in a very coarse way—grouping together in one "ability class" the A's, B's, etc., who vary widely in ability.

5. The grade- or credit-point element in the device seems to be a non-essential. In order to operate it successfully, "faculty action" appears to be necessary just the same in individual cases. Therefore a school that operates one of the conventional marking systems, and "on faculty action" permits individual pupils to vary the number of courses in accordance with their abilities, is carrying out the chief function of the credit-for-quality scheme.

6. School principals and superintendents should acquaint themselves with the fundamental inadequacies of the method as a device for adapting school work to individual differences. They are urged to take the far more direct method of grouping pupils in sections of approximately equal ability and prescribing courses of study that are fitted to the differences in ability of these groups. To permit a student to take *more* courses is the easier method; this fact explains the number of schools doing it. It only very partially solves the problem, and that, too, for only a small fraction of our school population. The formation of sections of like ability can be easily

and helpfully accomplished by the use of practical tests for "general ability" or "intelligence."[1]

To adapt courses of study to varying groups is difficult. It will be a very profitable exercise, however, for the faculty of any school. It is to be hoped that principals will make greater use of it in the future.

BIBLIOGRAPHY ON CREDIT-FOR-QUALITY

[Articles are arranged in chronological order]

1. THOMAS, CALVIN. "The New Program of Studies at Columbia College," *Educational Review*, XXIX (1905), 325–37.

Relates to credit-for-quality only incidentally. Describes credit and point scheme introduced in colleges since 1905. The first published discussion found upon credit-for-quality.

2. KENNEDY, JOSEPH. "Credit for Quality in the University of North Dakota," *Educational Review*, XXXII (1906), 525–31.

Description of the administration of credit-for-quality in the University of North Dakota during 1905–6. Gives the point scheme installed and reports the attitude of those faculty members who were favorable to the use of the device. Shows how it has been changed under experimentation.

3. SECOR, W. B. "Credit for Quality in Secondary Schools," *Educational Review*, XXXV (1908), 486–90.

Recommends a credit scheme practically like that used at the University of North Dakota; advances arguments for the scheme. Gives concrete illustrations showing the way it works with individual students.

4. LADD, A. J. "Credit for Quality in Secondary and Higher Education," *Educational Review*, XXXVII (1909), 298–305. (Summary of an article by same author in *Western Journal of Education* for May, 1909.)

Primarily a reply to Kennedy (2). Reports the attitude of those in the University of North Dakota opposed to credit-for-quality. Gives no concrete evidence, but enumerates evils which he says opponents of the scheme in the University recognize.

5. JUDD, CHARLES H. "Formalism in Defining High-School Units," *School Review*, XXII (1914), 649–65.

An article which enumerates the difficulties in standardizing quantitatively the high-school unit and which suggests methods

[1] Professor F. N. Freeman and the writer are now standardizing such group tests for Grades VII–XII inclusive. They will be glad to communicate with anyone about them. The Otis Group Intelligence Tests have been thoroughly standardized for the elementary grades. They are distributed by the World Book Company, Yonkers-on-Hudson, N Y.

of correcting these. Touches incidentally on the specific problem of credit-for-quality through the discussion of crediting performances of children who vary widely in ability.

6. HOBLIT, M. L. "The High-School Unit: Quantity, Quality, and Credit," *School Review*, XXIII (1915), 303–6.

Article called forth by Judd (5). Says the solution of the problem is to give extra quantitative credit for unusual grades of work. By concrete illustration recommends a scheme of credit-points by which the better students can finish a four-year course in shorter time. Taking extra courses and completing the work in shorter time appears to be the crux of his argument.

7. RUEDIGER, W. C. "Is Credit for Quality Sound?" *School Review*, XXIII (1915), 450–54.

A reply to Hoblit (6). Gives four arguments against credit-for-quality: (1) quantity and quality are disparate; (2) the marking-system generally used carries credit-for-quality; (3) "this unnatural credit introduces a vicious and artificial incentive"; (4) implies that students will be permitted to graduate with fewer courses. The fourth point is basic to the later discussion. Ruediger's misinterpretation of credit-for-quality is typical of that of a great many school-men.

8. MEYER, MAX F. "Symposium on Credit for Quality by Professors Meyer, Hoblit and Johnson," *School Review*, XXIII (1915), 711.

The first of three discussions in a symposium (8, 9, 10). Replies to Ruediger's four arguments against credit-for-quality. Shows that it does not mean permitting students to graduate without a given number of required subjects. Includes general philosophical discussion of honors, rewards, and penalties in college and school work.

9. HOBLIT, M. L. "Is Credit for Quality Sound? A Rejoinder," *School Review*, XXIII (1915), 712–14.

Replies to Ruediger's fourth point by indicating that there is no suggestion that high-grade work shall excuse students from any fundamental subjects or content. Students shall not be permitted to graduate with fewer than the standard number of courses. Repeats concrete example given in previous article (6).

10. JOHNSON, FRANKLIN W. "Credit for Courses in the University High School," *School Review*, XXIII (1915), 715–18.

Describes credit-for-quality as administered in the University High School, University of Chicago. Summarizes briefly the favorable results of using it during four years.

11. RUEDIGER, W. C. "Credit for Quality," *School and Society*, III (1916), 207–8.

A reiteration of what was said in previous article (7).

12. PICKELL, FRANK G. "Credit for Quality in the Richmond (Ind.) High School," *Education, Administration and Supervision*, III (1917), 533–8.

Describes the credit-for-quality scheme in use in the Richmond (Indiana) High School. Reports without objective evidence that the scheme leads to the improvement of scholarship in the school. Discusses certain general phases of school marks.

II. COMMENTS ON CURRENT EDUCATIONAL PUBLICATIONS

A type of civics which has been for the most part overlooked is presented in very readable form[1] by two writers, Mr. and Mrs. Giles, who have had much experience as teachers of young people. The book contains descriptions of the industrial and professional opportunities which this country offers; it gives in each case an account of the qualifications and preparation required for success in the vocation under consideration, and presents a balanced account of the advantages and disadvantages of that particular calling.

In addition to this useful information for the guidance of personal choice the book carries also a very large freightage of information about industrial and social institutions. For example, there is a chapter on the opportunities for employment offered by the government. In this chapter the authors have managed to give a vivid picture of life in the government offices and some insight also into what these offices are accomplishing.

There is a chapter at the end of the book on personality which without preaching gives to the reader a clear idea of the commercial value of good presence and good character.

The examples throughout are concrete and direct. The vocabulary used is such as to fall within the range of upper-grade pupils. The book ought to find an immediate welcome in the junior high school and elsewhere where pupils are beginning to think of their future occupations.

The book furnishes a very striking example of the new type of material which is sure to be taken up in increasing measure by schools. Civics will be divided into many sections. Each section will represent a different mode

[1] FREDERIC MAYO GILES and IMOGENE KEAN GILES, *Vocational Civics, A Study of Occupations as a Background for the Consideration of a Life-Career*. New York: Macmillan, 1919. Pp. x+252. $1.30.

of approach, but all will converge on social institutions, and the course of study will be enriched by a content which has never appeared in the books on geography or history or in the ordinary literary readers.

The book is the outgrowth of a course given by the authors to high-school pupils. Many teachers ought to be encouraged by it to formulate the results of their class work so that there shall be a more general participation in the advantages which come from the introduction of social studies into school curricula. Many teachers are here and there doing work in civics which is successful. What is needed is an exchange of materials.

C. H. JUDD

A supplementary book of outdoor science for teachers and pupils of nature-study.—As indicated by the title, this book[1] is divided into three parts. An approximately equal number of pages is given to each of the three phases of nature-study which are of perennial interest to pupils.

Part I, divided into twenty-three chapters, contains sixteen chapters which consider different varieties of trees, such as the maple, elm, oak, ash, evergreen, tulip, sequoia, birch, cedar, and pine. Interspersed with these chapters are seven chapters bearing on structure of trees, woods and their properties, figures in woods, transplanting trees, care of trees, and other similar subjects of general interest.

Part II, in seventeen chapters, is devoted to the heavenly bodies, including, among others, the following chapters selected at random: the universe and the solar system, determining distances to the heavenly bodies, the starry heavens, the sun, the moon, the planets, shooting stars and comets.

In Part III twenty-nine chapters treat of birds. One finds, among these, chapters on the thrush family, classification of birds, feeding birds in winter, warblers, migration of birds, swallows, sparrows, birds of prey, water birds, flycatchers, and making grounds attractive for birds. Following a short appendix to Part III are found over fifty colored engravings of birds reproduced from the original paintings of Louis Agassiz Fuertes.

The book was written to overcome the lack of a suitable textbook in outdoor science of an elementary nature. It is designed for use in the upper grades of the elementary school and for classes in the junior high school to encourage pupils to observe and study the world about them. It is suggested by the author that Part I be studied in the fall, Part II in the winter, and Part III in the spring, but he advises against the mistakes of restricting the

[1] EDWARD LINCOLN MOSELEY, *Trees, Stars and Birds*, Yonkers-on-Hudson, N.Y.: World Book Co., 1918. Pp. 246.

study of any part to a single season and of attempting to finish any part before taking up the other parts.

The average length of the chapters is between five and six pages. This gives the book the appearance of a ready-reference book. However, it contains some valuable directions to pupils and should find a place in the elementary-school library. For pupils in general science it may be used as a supplementary reference. The valuable bibliographies at the end of each part should not be overlooked.

C. J. PIEPER

III. PUBLICATIONS RECEIVED DURING THE PAST MONTH

A. GENERAL EDUCATIONAL METHOD, HISTORY, THEORY, AND PRACTICE

LAMBERTON, C. D. *Professional Arithmetic Note Book: Teaching the Special Topics.* Paper. Published by the *School Quarterly*, Berlin, Wis., 1917. Pp. 20. $0.15.

St. Louis Survey. JUDD, CHARLES H., and others. Yonkers-on-Hudson, N.Y.: World Book Co., 1918. Vol. I, pp. ix+275; Vol. II, pp. v+359; Vol. III, pp. v+246.

B. BOOKS PRIMARILY FOR ELEMENTARY-GRADE TEACHERS AND PUPILS

FISHER, ELIZABETH F. *Resources and Industries of the United States.* Boston: Ginn & Co., 1919. Pp. ix+246.

O'KANE, WALTER C. *Jim and Peggy at Meadowbrook Farm.* Farm Reader Series. New York: Macmillan, 1917. Pp. xiii+223. $0.60.

SKINNER, ELEANOR L., and SKINNER, ADA M. *Happy Tales for Story Time.* New York: American Book Co., 1918. Pp. 180.

STONE, JOHN C. *Junior High School Mathematics.* Book I. Chicago: Benj. H. Sanborn & Co. Pp. x+214.

TAYLOR, E. H., and FISKE, ALLEN. *Junior High School Mathematics.* New York: Henry Holt & Co., 1919. Pp. ix+210.

C. BOOKS PRIMARILY FOR HIGH-SCHOOL TEACHERS AND PUPILS

ANDERSON, H. S. *Food and Cookery.* Mountain View, Cal.: Pacific Press Pub. Assoc., 1917. Pp. 163.

CLARK, ZELMA E., ed. *"Marmion" by Sir Walter Scott.* New York: Charles E. Merrill Co., 1919. Pp. 290.

CRAWFORD, J. P. W. *A First Book in Spanish.* New York: Macmillan, 1919. Pp. ix+399. $1.20.

DANN, HOLLIS. *Junior Songs.* New York: American Book Co., 1918. Pp. 207.

FULTON, E. G. *The Vegetarian Cook Book.* Mountain View, Cal.: Pacific Press Pub. Assoc., 1914. Pp. 271.

HOLMES, S. J. *The Elements of Animal Biology.* Philadelphia: P. Blakiston's Son & Co., 1919. Pp. x+402. $1.35.

MCGOWAN, ELLEN B., and WAITE, CHARLOTTE A. *Textiles and Clothing.* New York: Macmillan, 1919. Pp. ix+268. $1.10.

MCHALE, C. F. *Spanish Taught in Spanish.* Boston: Houghton Mifflin Co., 1919. Pp. viii+136. $1.00.

NICOLAS, LIEUT. RENÉ. *Carnet de campagne d'un officier francais.* Chicago: Benj. H. Sanborn & Co., 1919. Pp. xi+266.

MONROE, PAUL, and MILLER, IRVING E., eds. *The American Spirit.* Yonkers-on-Hudson, N.Y.: World Book Co., 1918. Pp. xv+336.

SCHERER, PETER. *Beginners' French Reader.* Yonkers-on-Hudson, N.Y.: World Book Co., 1919. Pp. ix+192. $0.88.

SPILLMAN, W. J. *Farm Science. A Foundation Textbook on Agriculture.* Yonkers-on-Hudson, N.Y.: World Book Co., 1918. Pp. vii+344. $1.28.

TRANSEAU, EDGAR N. *Science of Plant Life.* Yonkers-on-Hudson, N.Y.: World Book Co., 1919. Pp. ix+336. $1.48.

D. PUBLICATIONS OF THE UNITED STATES BUREAU OF EDUCATION AND SIMILAR MATERIAL IN PAMPHLET FORM

Annual Report of the General Education Board 1917–1918. New York: General Education Board. Paper. Pp. x+116.

A Thousand of the Best Novels. Fourth Revision. Compiled by the Newark Free Public Library. Newark, N.J.: Baker Printing Co., 1919. Pp. 36. $0.05.

Resourcse and Standards of Colleges of Arts and Sciences. Bulletin No. 30, 1918. Bureau of Education. Pp. 79.

GEE, WILSON. *South Carolina Botanists: Biography and Bibliography,* No. 7. Columbia, S.C.: Issued by University of South Carolina. Pp. 52.

PIERSON, W. W., JR. *A Syllabus of Comparative Government and National*

Ideals. War Information Series No. 22. Chapel Hill, N.C.: University of North Carolina, 1919. Pp. 54.

Recent Issues of the United States Shipping Board:

A List of Books on Foreign Countries.

A List of Books on Foreign Languages.

A List of Books on Ships, Commerce, and the Merchant Marine.

A List of Books on World Trade.

Service Flag Day. No. 71. Columbia, S.C.: University of South Carolina. Pp. 23.

E. MISCELLANEOUS BOOKS

CUNINGGIM, JESSE L., and NORTH, ERIC M. *The Organization and Administration of the Sunday School.* New York: Methodist Book Concern, 1919. Pp. 155. $0.60.

HALSTEAD, WILLIAM R. *The Tragedy of Labor. A Monograph in Folk Philosophy.* New York: Abingdon Press, 1919. Pp. 107. $0.50.

KEELER, RALPH W. *Heart Messages from the Psalms.* New York: Abingdon Press, 1919. Pp. 137. $0.50, plus postage 5 cents.

KENNEDY, MINNIE E., and MEYER, MINNA M. *The Training of the Devotional Life.* New York: Methodist Book Concern, 1917. Pp. 123. $0.40.

PIERCE, FREDERICK E. *Currents and Eddies in the English Romantic Generation.* New Haven, Conn.: Yale University Press, 1918. Pp. 342. $3.00.

RANKIN, T. E. *American Authorship of the Present Day.* [Since 1890.] Ann Arbor, Mich.: George Wahr, 1918. Pp. 121. $0.85.

RICHARDSON, NORMAN E. *Religious Education and Reconstruction.* New York: Abingdon Press, 1919. Pp. 32. $0.15.

SEDGWICK, HENRY D. *Dante.* New Haven, Conn.: Yale University Press, 1918. Pp. xiii+187. $1.50.

SWEET, WILLIAM WARREN. *A History of Latin America.* New York: Abingdon Press, 1919. Pp. 283. $3.00.

TIPPY, WORTH M., and KERN, PAUL B. *A Methodist Church and Its Work.* New York: Methodist Book Concern, 1919. Pp. 157. $0.60.